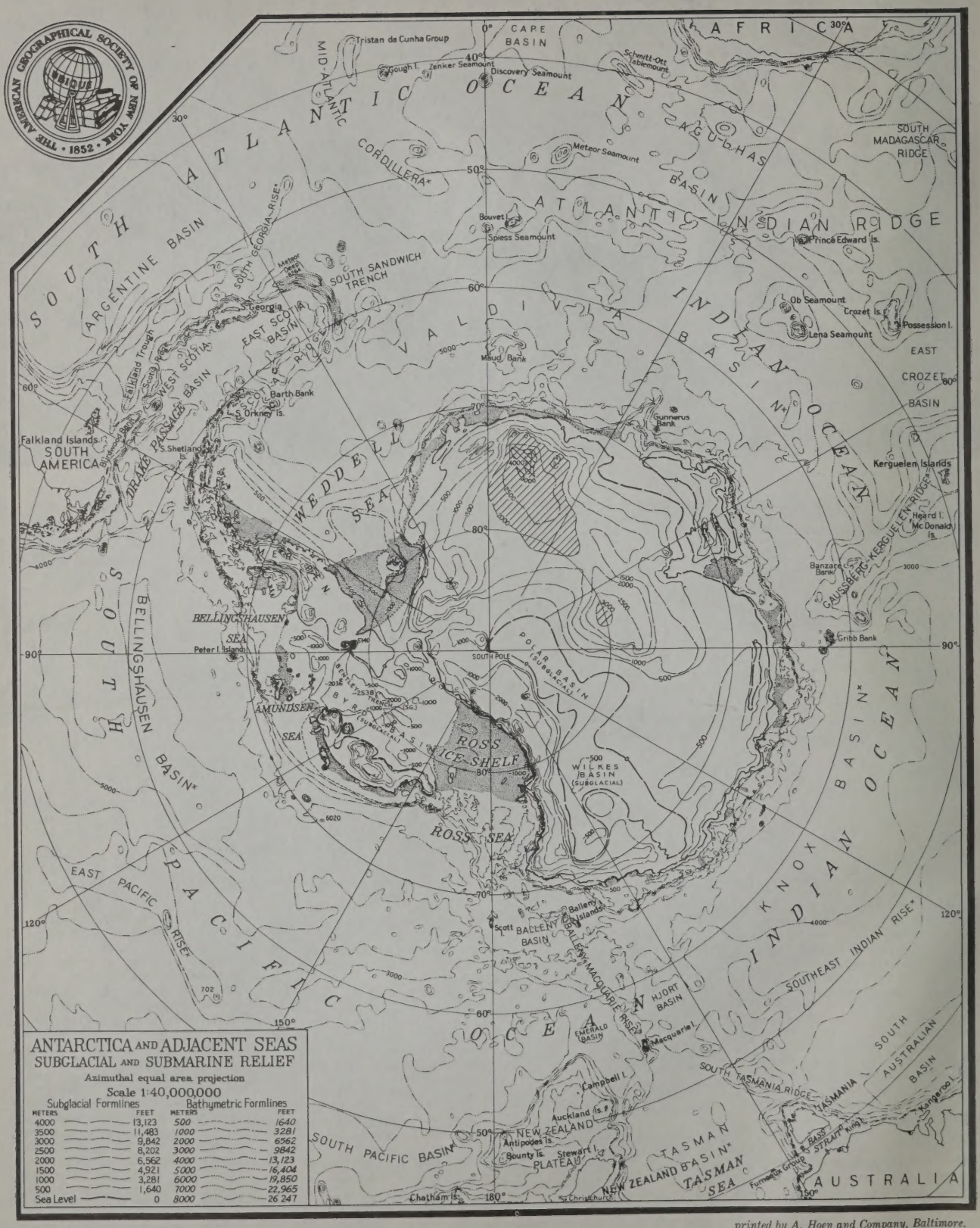
THE POLAR TIMES

BEARING NORTH: Polar bears symbolize winter as they make tracks across frozen wastes of Norwegian Bay, Queen Elizabeth Islands, Canada.



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The Polar Times

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No. 54. JUNE 1962.

BASE IN ANTARCTIC ENTERS ATOM AGE

Nuclear Plant at McMurdo to Provide Power

CHRISTCHURCH, New Zealand (AP)—When the long winter night settles over the Antarctic in May, the United States naval station at McMurdo will glow with power from the continent's first nuclear reactor.

Fast installation of the reactor was one of the achievements that made the past season the most successful yet for Operation Deep Freeze, the United States scientific research program in the Antarctic.

American scientists at Christchurch, staging point for the Antarctic exploration, said the nuclear reactor would provide ample power for lighting, heating and scientific experiments. It will soon provide power for water distillation and sewage treatment plants.

Water is now being melted down by Diesel burners after being excavated from "snow mines" on the slopes of Ross Island.

But volcanic contamination makes the water far from pure, and with up to 1,000 men moving into the area every year, clean snow mines must be sought farther and farther away from camp.

About 200 Americans—scientists and Navy men—are remaining at McMurdo during the winter.

Scientific studies will include aurora, biology, meteorology, ionospheric physics and geology. The naval team must service machinery which was in operation for maximum periods during the summer, and in August begin preparation of the ski-way, ready for next September's summer "invasion."

Other groups are wintering in a model village, built under the snow at Byrd Station, in the heart of Marie Byrd Land, and at the South Pole, each some 800 miles from the main base at McMurdo and a similar distance apart.

The village, under snow, which has replaced the old Byrd encampment that was crushed by thirty-five feet of accumulated snow, has been built in huge tunnels.

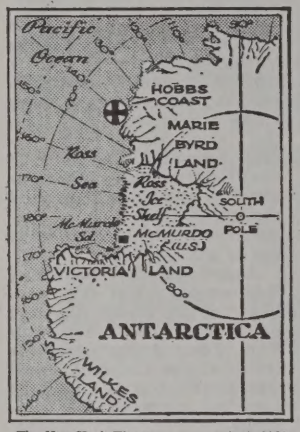
The buildings, standing within the tunnels, have an expected life of twenty years—three times that of the previous camp built on the surface, and providing much better living conditions than old Byrd.

Power and light here are still provided by diesel generators, but the continent's second nuclear reactor will be installed early in 1965.

In the past Antarctic "season," scientists landed the biggest fish ever caught in Antarctica. It was 52 inches long and weighed 58 pounds. They took it from the mouth of a seal, which popped up through a hole in the ice where biologists were working.

Later, 350 miles from the South Pole, Ohio State University geologists blasted fifty feet into the side of a mountain and took the first coal mined in Antarctica.

U. S. Icebreaker Finds A New Antarctic Island



The New York Times Feb. 1, 1962

Site of new island (cross)

WELLINGTON, New Zealand, Jan. 31 (Reuters)—The United States icebreaker Glacier reported sighting a new island today off Hobbs Coast of Marie Byrd Land in the Antarctic.

The Glacier, which is sailing along a part of the Antarctic coast never before explored by sea, said the island was about two miles square and reached a height of 1,000 feet.

A helicopter from the ship took photographs of the island so that more detailed studies could be made. The Glacier gave the position of the island, which is inhabited only by penguins, as 74 degrees 42 minutes south, 140 degrees 6 minutes west.

NEW DATA FOUND ON POLAR TROUGH

Antarctic Party Indicates It May Link the Oceans

By WALTER SULLIVAN

The New York Times.

April 22

The debate whether there is a great trough in the earth's crust, linking the Atlantic and Pacific Oceans across Antarctica, has been revived.

A seven-man University of Wisconsin trail party has found that a trough runs around the wall of mountains that seemed to preclude such a link.

The idea of an Atlantic-Pacific connection beneath the south polar ice was born early in the century. British scientists observed a current flowing out from beneath the floating Ross Ice Shelf on the Pacific side of the continent. Some thought it might represent a flow of water from the Atlantic.

This was ruled out by Admiral Richard E. Byrd, who found that the ice surface along the hypothetical route rose so high that its base must be aground. Nevertheless the idea of a rock trough of vast dimensions, filled solidly with ice, has persisted.

The exploration of the last four years has disclosed such a trench extending from the Ross Shelf, on the Pacific Coast, deep into Marie Byrd Land. However, it curved toward the Bellingshausen or Amundsen Seas, still on the Pacific side. Dr. Edward C. Thiel of the University of Minnesota found so much high ground spanning the route to the Atlantic that he ruled any but a very narrow trough.

Dr. Thiel died in Antarctica last November when flames from devices used for jet-assisted take-off of conventional planes ignited, leaking gasoline beneath the plane he was riding.

The evidence for a long end run by the trough was obtained by a group landed by plane near Thurston Peninsula last fall. It set forth Dec. 1 on a 1,052-mile tractor journey to the Palmer Peninsula and back to Ski-Hi station in Ellsworth Land. More than a ton of rock samples were collected from ten peaks visited on the way.

It was found that high ground blocked continuance of the trough or Bentley Trench into the Bellingshausen Sea. Rather, it swung around the end of the Ellsworth Mountains toward the Weddell Sea and the Atlantic. The northern end of these mountains was first sighted by Lincoln Ellsworth in 1935 and was named by him the Sentinel Mountains.

They have since been discovered to be a major mountain system that has been named for its discoverer. It shows as such on the new map of Antarctica, issued this week by the American Geographical Society under a grant from the National Sicence Foundation. The map also shows the nearby Thiel Mountains.

Such honoring of Dr. Thiel was approved by the United States Board on Geographic Names only a week before the map went to press. The map, prepared by William A. Briesemeister from the latest exploration data of all expeditions, includes an inset map of Antarctica as it might look if the ice were suddenly withdrawn.

Much of it would consist of islands and there would also be a deep basin in the main part of the land mass. Discoveries by the recent journey into Ellsworth Land suggest that the base of Palmer Peninsula is far narrower than thought heretofore and that the Filchner Ice Shelf may rival the Ross Ice Shelf as the world's largest floating ice apron.

The party was led by Dr. John C. Behrendt, a veteran of several earlier over-ice traverses. It was on the trail sixty-eight days."

ATOM WEATHER STATION

Fully Automatic Operation Is Installed in Antarctica

The New York Times.

WASHINGTON, Feb. 8—A fully automatic, atomic-powered weather station has been installed at Minna Bluff, fifty-four miles south of McMurdo Sound in Antarctica, the Atomic Energy Commission reported today.

Electric power is generated by heat from the radioactive decay of strontium 90 within the atomic battery.

A similar station was set up last year on Axel Heiberg Island, in the Canadian Arctic.

In both cases periodic weather broadcasts are monitored by a manned weather station within radio range.

South Pole Message Is Found

MCMURDO SOUND, Antarctica, Jan. 27.—For the second time in 32 years, a small rocky ridge protruding through the icy Antarctic wilderness has served as a link between three eras of Antarctic exploration.

The ridge, known as Mt. Betty, lies in the Queen Maud Range about 325 miles from the South Pole.

A 32-year-old note left in a cairn on this ridge by members of Admiral Byrd's first Antarctic expedition has just been found by a University of Michigan glaciological field party.

On the same ridge 32 years ago, the party that wrote this note found another written by Roald Amundsen 18 years earlier after becoming the first man to reach the South Pole.

The note just found dated "Christmas, 1929," had been placed in a cairn by Byrd's six-man geological party under Dr. Laurence M. Gould, eminent scientist, and chairman of the National Academy of Sciences' Committee on Polar Research. Gould's note was recovered by Dr. Charles W. M. Swithinbank, who is carrying out his third consecutive Summer of studies of the Ross Ice Shelf.

Each man—Amundsen, Gould, and Swithinbank—represent distinct stages in man's penetration of the world's only uninhabited continent. Amundsen belonged to the age of pioneer Polar conquest, Gould to the period that saw the introduction of aviation and technology, and Swithinbank to the present period of large-scale scientific investigations.

The Polar Times

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Care August Howard, Secretary, 98-20 62nd Drive (Apt. 7H), Rego Park 74, New York.

AUGUST HOWARD, Editor

THE POLAR TIMES highly recommends "The Polar Record," published by the Scott Polar Research Institute, Cambridge, England.

The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are one dollar a year, which entitles members to receive THE POLAR TIMES twice a year.

Back issues are 50 cents each. Bound volumes, covering five years, are $8.00 each.

Ship Reaches Antarctic Base

BOSTON, Jan. 12 (AP).—The Coast Guard announced today arrival of the icebreaker Eastwind with supplies for Cape Hallett, Antarctica. First priority was given 61 bags of Christmas mail and presents.

These were ferried ashore by one of Eastwind's helicopters when the icebreaker was barred from the isolated base by six to eight feet of ice studded by numerous icebergs, some a mile long.

The Cape Hallett station is manned by U.S. and New Zealand participants in Operation Deepfreeze 1962. The Eastwind brought them oil and other supplies. She is due to return to Boston at the end of April.

Geologists Dig Unweathered Antarctic Coal

By the Associated Press

Washington
Jan. 17

Five university geologists, working in zero-degree weather and amid wind gusts of up to 70 miles an hour, are unearthing what may become the basis of the Antarctic's first industry: unweathered coal.

Although hard coal has been found before in many areas of the ice-covered continent, all of it was obtained at or very near the surface and, consequently, had been long exposed to the severe weather.

The coal being mined by the geologists from Ohio State University is relatively hard, probably semianthracite and, like other Antarctic coal, has a high oxygen content. Scientists will try to determine its economic potential.

Dr. James M. Schopf of the United States Geological Survey's coal geology laboratory, said there is strong indication that coking coal may be present in the area, the Central Horlick Mountains 350 miles from the South Pole. If there is a minable reserve of coking coal, he said, it might be the backbone of the continent's first industry.

The mining team, which operates under a $72,300 grant from the National Science Foundation, is supervised by William E. Long. The other members are John F. Ricker, George A. Doumani, Merwyn D. Higgins, and Courtney J. Skinner.

They have been in the Horlicks since last November and will be evacuated by Navy aircraft next month.

Navy to Collect Antarctic 'Waste'

By the Associated Press

Honolulu

The United States Navy will conduct history's longest "garbage collection" to ensure strict adherence to a new International treaty involving ice-capped Antarctica, it has been reported here.

Radioactive wastes from two nuclear power reactors to be built there, in the world's coldest continent, will be picked up, perhaps twice a year, by ships from the United States. These nuclear ashes will be hauled to the United States for disposal in special underground nuclear "dumps" — or disposed of in shielded containers at sea.

Round trips for collecting this component of the "garbage" of the atomic age will be about 24,000 miles, says Capt. Edward Conrad of the Office of the Chief of Naval Operations, who stopped here en route to the Antarctic.

Source of the garbage will be a reactor near the coast of the continent and another one deep inland, both designed to furnish light, heat, and power for two key American installations. The reactors will reduce the need for hauling fuel oil to the often ice-locked continent.

Rescuers Reach Antarctic Plane

AUCKLAND, New Zealand, Jan. 3 (AP).—A United States Navy Hercules transport with engine trouble made a forced landing New Year's Day on Ross ice shelf, 500 miles out from McMurdo Sound, on a flight to New Byrd Station.

Operation Deepfreeze headquarters at Christchurch reported the pilot, Maj. L. Darbyshire of the United States Marines, made a smooth landing. A rescue plane piloted by Lt. J. V. Weeks with a maintenance crew landed later beside the Hercules.

Lt. Weeks left a maintenance staff with Maj. Darbyshire and took on a Catholic chaplain, Lt. Comdr. A. Mendosa, who was en route to Byrd to celebrate New Year's Day mass, and returned to McMurdo.

Medal for U. S. Explorer

LONDON, Feb. 4 (Reuters)—The Royal Geographical Society awarded its 1962 medal today to United States Navy Capt. Edwin A. McDonald for coastal explorations in the Antarctic.

MARINE LIFE FOUND BENEATH SHELF ICE

WELLINGTON, New Zealand (Reuters)—Two scientists from Stanford University have collected marine life specimens beneath a permanent ice shelf.

They caught specimens in the McMurdo Sound region of Antarctica through pressure cracks in the shelf ice around islands.

The United States National Science Foundation said the specimens were probably the most southerly ever collected.

The biologists, J. L. Littlepage and J. S. Pearse, have spent more than twelve months studying amphipods, starfish and plankton in the polar region.

Their collection comprises sea spiders, marine worms, corals, sponges and various crustaceans.

This proves that biological and oceangraphic investigations beneath shelf ice are feasible, the National Science Foundation reported, and might lead to further study beyond the most southern stretches of open water.

Life under thick shelf ice, through which no sunlight penetrates could then be compared with life under comparatively thin sea ice.

American Polar Society

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BYRD STATION BEING BUILT

Antarctic Structure Is Maze Of Tunnels

New Byrd Station, Antarctica, Feb. 10 (*Reuters*)—A futuristic scientific station is being carved out of the mile-high icecap here, in a remote spot on the Antarctic plateau.

United States Navy men working around the clock and using a remarkable machine with an insatiable appetite for snow are fighting against time to have the station ready for occupation by March 1.

It is to replace "Old" Byrd Station, 6 miles away, which is being turned into a frozen death trap by thousands of tons of snow and ice which have accumulated over it during the last five years.

American scientists at Old Byrd are already packing their equipment for the evaeuation, which is scheduled for completion before the Antarctic winter night closes in during March and April.

New Byrd is being built by the Navy as part of Operation Deepfreeze, the Navy program to support the scientific assault on Antarctica. It is on a desolate plateau, hundreds of miles from the sea and 700 miles from the South Pole itself.

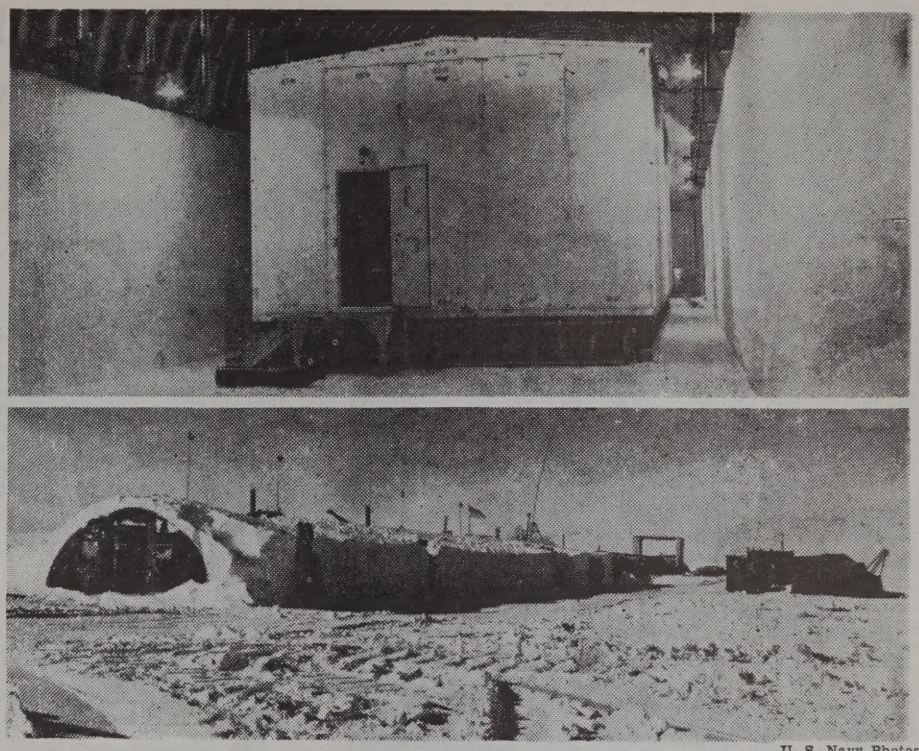
Adm. David M. Tyree, commander of Operation Deepfreeze, said that "New Byrd will bring a new concept to our inland station activities in Antarctica."

Using techniques developed by United States forces in Greenland, Navy Seabees are building the new station inside a network of tunnels under the surface of the icecap.

The tunnels are nothing more than trenches about 30 feet deep and up to 36 feet wide, roofed over with steel or wooden arches and covered again with snow. When it is finished, the only structures above the surface will be access shafts, antennae, air vents and four scientific towers.

By using this method, the planners of New Byrd believe that they will have solved the problem of drift—the accumulation of wind-blown snow around structures built on the surface.

Much of the tunneling now is complete, and many of the buildings inside are ready for occupation. Originally, the station was scheduled for completion next year. But the rapid deterioration of Old Byrd made it necessary to speed up construction.



U. S. Navy Photos

One of the housing structures in the tunnels is shown at upper right and, below, a hut at New Byrd Station.

Lt. David C. De Vicq, who is in charge of construction, believes that by the end of the summer enough of the station will be ready to allow the coming winter's scientific program to proceed smoothly. A few finishing touches will have to wait until the next Antarctic summer.

The rapid construction program would have been impossible without the aid of the Peter-Plow—a Swiss-manufactured machine which can excavate more than 500,000 cubic feet of ice and snow in a day. This giant machine eats into the ice with a powerful revolving blade like a lawn mower, and throws it up alongside the trench through two tall chutes.

From a distance, the Peter-Plow looks like a moving snow-geyser as it shoots a plume of fine snow 50 feet into the air from the bottom of its trench.

The 20-ton machine was flown in sections from Switzerland to the New Byrd site and assembled on the ice.

After the trenches are excavated, prefabricated roofing sections are bolted into place and then covered over with the snow. The walls of the trenches have sufficient strength to remain hard and fast without support, and carry the weight of the roof as well.

The main tunnel, 200 yards long, is large enough for two big tractors, or Sno-Cat tracked vehicles, to meet inside.

The shorter, lateral tunnels are big enough to house the prefabricated buildings inside them with ample additional room for ventilation.

De Vicq estimates that the new station will have a working life of twenty years, compared with the five years of the Old Byrd.

"We are getting an atomic power station designed for a twenty-year life," he said, "and we think we have mastered the techniques of building a more or less permanent station under the snow. We hope this will last twenty years, and I think this figure is realistic."

Another new feature incorporated in the station will be a novel method of obtaining water, which, because of the subzero temperatures here, is never found naturally.

Steam will be used to bore shafts down into the icecap, and the water which forms in the bottom will be pumped out. The caverns thus created deep down will later be used for sewage disposal.

Attack of Killer Whale

A thirty-foot killer whale, a carnivorous mammal of the Antarctic seas, has been known to attack the giant blue whale, which sometimes reaches 100 feet in length and weighs 150 tons.

ANTARCTIC PARTIES FOUND COOPERATIVE

WASHINGTON, April 6 (AP)—Rear Admiral David M. Tyree told today about the "great spirit of cooperation" among the dozen nations — including Russia — with expeditions in Antarctica.

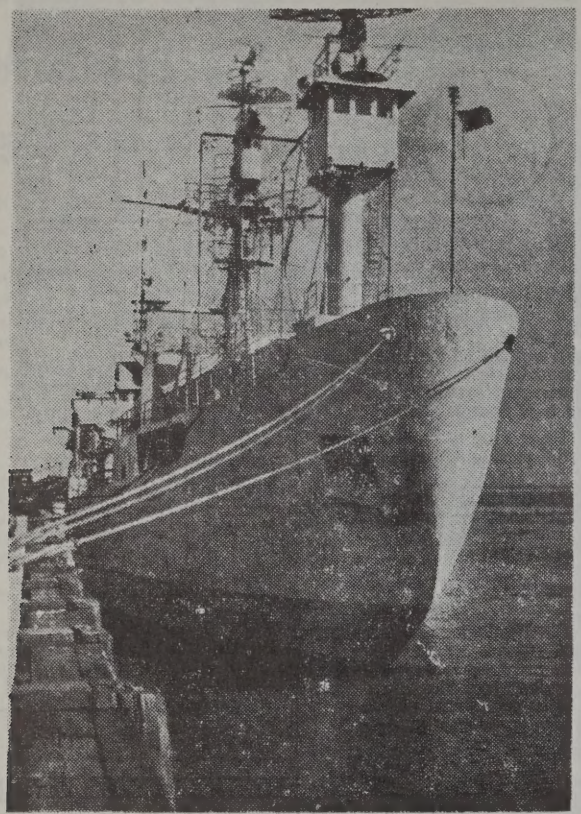
Noting that the season just closed was the first since ratification of the Antarctic Treaty, a newsman asked the admiral if this had noticeable effect.

Admiral Tyree replied that in each of the three seasons during which he had commanded the support force for the United States scientific parties he had been impressed with the cooperation among the different nationalities. He added he did not think the treaty had made any change in this situation.

On his return today from his third summer in Antarctica, Admiral Tyree said the Russians appeared to be interested in building up the size of their summer-season parties. To do this, they are attempting to improve their supply system, he said.

The Russians, for the first time, brought in two planes in the 1961-62 season. The Navy refueled the Russian planes at McMurdo Sound as they flew into Antarctica, bound for the main Soviet station at Mirny.

Floating Oceanographic Laboratory



The Eltanin has enclosed lookout stations above the deck

A floating scientific laboratory—a converted Navy ship—will be a major addition to the United States Antarctic set-up this year.

The USS Eltanin, built especially for naval transportation in the Arctic, has been made available to the National Science Foundation, which directs the Nation's Antarctic program, for this purpose. She is especially suited for the job, with an ice-resistant hull, a light-ice-breaker bow, and other features suitable for ice conditions.

Conversion for scientific use has necessitated a substantial rearrangement of both interior and deck areas. Cargo holds have been converted into laboratories for meteorology, marine biology, hydrography and atmospheric studies. A large cosmic ray scintillation counter has been installed.

The Eltanin has been provided with a helicopter deck and a weather balloon inflation center. In short, the oceanographic equipment includes all the standard devices to record and evaluate ocean currents, temperatures and depths, for collection and study of marine life, and for investigations of weather and cosmic ray phenomena.

The ship will operate in the region of the "Antarctic Convergence," the region where cold Antarctic waters sink beneath the warmer waters of the Atlantic, Pacific and Indian Oceans. This region is of special scientific interest because it is exceptionally rich in marine life and because the action of currents here has a strong influence on Southern Hemisphere oceanic movements, and because much of Southern Hemisphere weather originates here.

The Eltanin, according to present plans, will cruise in Antarctic waters a total of about 10 months a year. Rotating groups of scientists, technicians and crew members will leave or join the ship as necessary. Individual cruises probably will vary from one to three months in length. Plans for the first year of operation call for five cruises, each successively further west. Each cruise will take about six weeks.

The first will begin some time this summer and will explore the Drake Passage between the southern tip of South America and Antarctica's Palmer Penninsula.

Built in 1957 as a shallow-draft light cargo ship for Arctic operations, the Eltanin was extensively reconverted by the Mobile Ship Repair Company, of Mobile, Ala., for her new role as a research vessel.

The vessel's original heavy hull with its strengthened bow for ice conditions, and her most unusual feature, an enclosed ice lookout station mounted on a stubby forward mast have beeen retained.

The "crow's nest" on the mainmast is steel and glass enclosed to provide protection from frigid winds and sprays.

However, the new Eltanin has an extensive antennae array, additional deck housing, and a helicopter landing platform. And her cargo holds have been replaced by laboratories and quarters for about thirty scientists.

Antarctic Glaciers to Bear Names of Four Tufts Men

The Christian Science Monitor

Medford, Mass.

Four Tufts University men have been notified that Antarctic glaciers will be named after them. They are George H. Denton of Winchester, Mass.; Robert M. Goodspeed of Pennington, N.J.; Roger A. Hart of Lynn, Mass., and William G. Meserve of Waltham, Mass.

The unusual honors were announced recently by the United States Department of the Interior, which cited the men for their contributions to the study of the east Antarctic coastline. Their study uncovered evidence that the great ice cap there is receding.

The men, two of whom — Messrs. Hart and Meserve— will graduate in June, worked with Robert L. Nichols, chairman of the Geology Department of Tufts University and leader of several polar expeditions.

Glaciers to be named after them are located in South Victoria Land. New Zealand, which in the past claimed sovereignty over the area, has approved.

WINTER IN ANTARCTIC

285 Americans Are Remaining for Season of Isolation

WASHINGTON, March 13 (AP)—The last ship of the fading Antarctic "summer" has headed north and some 285 Americans left behind are getting ready for the winter of isolation.

The Navy said today the Coast Guard ice breaker Eastwind left the main base at McMurdo on March 4 with the last of the military and scientific personnel who had been in the Antarctic during the summer season.

High winds and near zero temperatures marked their departure.

Polar Ice Breaks Up Early

AUCKLAND, N. Z., Feb. 5 (AP)—Ice surrounding the McMurdo Sound airstrip is breaking up two weeks early this year, according to United States Deep Freeze Headquarters here. The Navy will evacuate scientists and service men from the Antarctic to New Zealand by ship, rather than by air, because the runway is unsafe for heavy planes.

ANTARCTIC SHIP FREED

Undersea Volcano Opens Way for Icebound Craft

CAPE TOWN, South Africa, March 22 (AP)—An undersea volcanic eruption has freed the South African polar supply ship Republic of South Africa, trapped for eight days in Antarctic pack ice off Queen Maud Land, according to radio messages received here today.

The eruption caused swells that cracked open a passage in ten-foot thick ice hummocks, the messages said. The vessel is now moving at three knots. The United States icebreaker Glacier is expected to reach her in eight days.

The undersea eruption was reported several days ago by the British Royal Navy's Antarctic ship Protector. The report said the eruption had occurred at Zavodvski Island, one of the South Sandwich Isles about 2,300 miles from Cape Town.

ICE MEASUREMENT GAINS

Army Developing a Technique for Unstable Glaciers

WASHINGTON — A better picture of the geographic features of land hidden under the ice in the Antarctic may be one of the results of an ice measuring process being developed by Army Signal Corps scientists, The Armed Forces Press Service reports.

Using a radio-sounding technique that had previously been successful on relatively stable ice caps, the developers have tested its effectiveness on glaciers.

ANTARCTIC COAL BROUGHT TO U. S.

Mined Samples Studied for Clues to Region's Past

March 13

Samples of the first coal ever mined on the Antarctic Continent have been brought to the United States, according to a scientist who returned late last month.

Some of the semi-anthracite coal would be commercially useful if the mine were, for example, in Pennsylvania instead of the Horlick Mountains of Antarctica, he said.

Scientists are principally interested in the Antarctic coal because of the clues it offers to the climate of that continent many millions of years ago.

They went to the trouble of mining it this past season to obtain unweathered samples.

In the past, explorers have frequently found coal on the continent, but such samples have been taken from surface outcroppings much weathered by the harsh climate.

In the 1961-62 research season, just ended, a small party of geologists from Ohio State University spent about three months in the Horlick range only a few hundred miles from the South Pole doing geological exploration under a National Science Foundation grant. At the site of coal outcroppings found the previous season they started a small mine in the hope of getting unweathered samples.

About 200 pounds of coal from their Dirty Diamond Mine have been brought back, William E. Long, leader of the field party, said in a recent telephone interview. Although the samples are not entirely unweathered, he believes them to be the first subsurface coal specimens taken from the Antarctic.

The coal appears to be semi-anthracite, quite similar in many characteristics to the coal from some areas of South Africa. It was presumably deposited about 250,000,000 years ago, demonstrating that the Antarctic once had a temperate, although not necessarily tropical, climate.

It is interesting, Mr. Long said, that geological specimens under the coal stratum show that some 300,000,000 years ago the region was in the grip of an earlier period of cold and glaciation probably comparable to that of today. How long the temperate period of coal deposition lasted is one of the key questions for which the scientists seek an answer.

The Dirty Diamond Mine has a horizontal shaft. Last season the geologists tunneled twenty feet into a mountainside, near Mount Schopf, that holds the coal deposit.

South Pole Station of the United States Antarctic Research Program.

Scientists Not Sure Base At Pole Is In Right Place

South Pole, Antarctica, Feb. 10 [*Reuters*] — Is the American scientific station at the South Pole in the right place? Some scientists here are not so sure.

The Amundsen-Scott Station—named after the first two men to reach the vicinity of the pole 50 years ago—was built by the United States Navy in 1956-57.

The aircraft which brought in the first party of building workers landed eight miles away. After sun-shots had been taken with a theodolite, the men moved to the place where the present station is and began building.

During the first winter, 1957, a large number of star-shots were made by the military and scientific leaders of the wintering-over party, Lt. Jack Tuck and Dr. Paul Siple.

As a result, a flagstaff was erected 2,400 feet away, flying the American flag, to mark the position of the true pole. A circle of oil drums was placed around it, as if to make sure that the pole was "caught" somewhere inside, even if not right under the flagstaff.

The fuel drums now are buried by snow, but the flagstaff remains. A few yards away is a deep crater in the snow, caused by 1,600 pounds of explosives used in a recent seismic experiment to discover the depth of the snow under the pole.

This flagstaff is accepted by most as the exact position of the pole, where all meridians meet.

It is here that visitors perform such antics as "walking round the world" and standing half in the eastern hemisphere and half in the western — or half in Wednesday and half in Thursday.

But a number of scientists believe that the flagstaff may be more than half a mile from the true pole. Some even put the error at about three miles.

Reasons they give for such a margin of error in the meticulous observations of Tuck, Siple and others include:

1. Exact calculations of geographical position require the establishment of a vertical line against which angles can be worked out. But because of the thickness of the ice running down some 9,000 feet under the pole, and the nature of the underlying bedrock, there are technical difficulties in finding a true vertical line.

2. Low temperatures play tricks, not only with the accuracy of instruments used but also with the observer positions of objects. Refraction of light rays, for instance, can cause objects many miles away to be seen while they are still below the horizon.

Two scientists here have recently been in radio conversation with a leading American astronomer about the feasibility of determining the pole's position by observing a moon occultation — that is, discovering the exact moment when a known star is "covered" by the moon.

This is one of the most accurate methods of determining position, and overcomes difficulties concerning the vertical line and optical illusions. Scientists hope that such an experiment will soon finally solve the question of the exact position of the pole.

Meanwhile, the problem is of no more than academic concern, because a few hundred yards or even a few miles will not significantly affect any of the work at present being carried out by scientists here.

Somewhere, not far away, the tent erected in 1911 by Ronald Amundsen, the first conqueror of the pole, lies today under about 25 feet of snow.

Computations based on Amundsen's readings show that he was certainly quite close to the true pole and may by chance even have found the exact spot.

During coffee breaks at the pole stations, scientists from time to time discuss whether there would be any possibility of ever locating the tent.

They say that as Amundsen left metal objects inside, these might be picked up by some radar device through the snow. But a difficulty here would be to differentiate the tent from a host of pieces of debris buried around the station, and from bundles of air-dropped supplies which plunged far into the snow when their parachutes failed to open.

Antarctic Mercy Flight Ends

CANBERRA, Australia, Jan. 8 (AP)—An Australian mechanic, in dangerous condition with cerebral hemorrhage, arrived in New Zealand for treatment today after a Soviet-American airlift across the Antarctic. The man, Alan Newman, was flown in a Russian plane from the Australian base at Mawson to the Russian base at Mirmy and then to the United States base at McMurdo Sound. A United States Navy plane flew Mr. Newman and the Mawson medical officer to Christchurch, New Zealand.

Accurate maps will soon be forthcoming of a 1,500-mile strip along McMurdo Sound, Antarctica, thanks to a team of adventurous surveyors.

By Herbert B. Nichols

The Christian Science Monitor

United States Navy

Setting Up Advance Camp on Ross Ice Shelf

Washington

THREE TOPOGRAPHIC engineers of the United States Geological Survey have completed a unique 1,500-mile mountain-hopping, data-gathering traverse in Antarctica. Traveling by high-flying helicopters, they skipped along a series of peaks between McMurdo Sound and Beardmore Glacier in record time.

It is the most ambitious map-control program ever attempted on the white continent.

The work was originally scheduled as a two-year or two-season project. The first half, called Topo South stretched between McMurdo and Plunket Point at the head of the Beardmore Glacier. Its completion was the 1961-62 goal.

Topo North, covering territory between McMurdo and Cape Roget (just north of Hallett Station), had been considered a possibility for completion in 1962 "if all goes well," otherwise it was scheduled for 1963.

All did go well. Topo South was completed by the end of November, 1961. Operations were immediately turned around and work started among the rugged peaks of Topo North, the chain of mountains bordering the western margin of Ross Ice Shelf and Ross Sea.

Thoroughly Photographed

Aerial photography covering this long segment of Antarctica (and more) had already been obtained by United States Navy Air Development Squadron 6 during the 1960-61 season. But without accurately surveyed control points that can be tied in to the photography, accurate maps cannot be made. The mountain-hopping now assures ground control needed by map makers here to chart some 100,000 square miles. That's an area roughly a third again as large as New England.

The surveying party consisted of William H. Chapman, party chief, from Washington, D.C.; William C. Elder, Arlington, Va.; and Ezekial R. Soza, Menlo Park, Calif. Three Army officers and six enlisted men led by 1st Lt. John H. Greene, Ft. Eustis, Va., went along to fly and maintain two gas-turbine helicopters. These helicopters can attain the 10,000- to 12,000-foot altitudes necessary to reach many of the higher Antarctic mountain tops.

Continuous additional support along the edge of the Ross Ice Shelf at the base of the mountains was provided by a helicopter and a single-engine plane of the Navy's Air Development Squadron 6. Funds for the mapping project are being provided by the National Science Foundation, which co-ordinates and administers all United States scientific research in the Antarctic.

Achievement 'Outstanding'

A National Science Foundation spokesman called completion of the 1,500-mile zigzag traverses within a time span of 57 days and in the face of the rigorous Antarctic climate "an outstanding achievement." According to Mr. Chapman, "favorable weather, excellent flying by the pilots, good logistic support, and the fine performance of Army helicopters (previously untested under Antarctic conditions)" were contributing factors.

Survey engineers have been obtaining mapping control with the aid of helicopters in the mountains of western United States including Alaska, for more than a decade. Extending the work to Antarctica's isolated peaks, using the Army's higher performance aircraft, was a normal outgrowth.

The two traverses will be connected to each other through an accurately computed daylight stellar position located in the McMurdo area and tied to solar positions at the two ends — Beardmore Glacier and Cape Roget.

Routine Described

Operations in the course of each day's schedule called for Mr. Soza to be lifted to a forward peak while Messrs. Chapman and Elder occupied a station on a rear peak. Mr. Soza would erect a wooden sighting target, hand-drill a hole in the rock and hammer in a permanent brass geological survey marker. Then he would run the remote unit of the tellurometer, an electronic distance measuring device.

The master unit, meanwhile, went into operation on the rear peak. It would send out a radio signal which was received by the remote unit and re-transmitted to the master.

Mr. Elder, operating the master unit, measured the time required for the signal to span the distance twice.

From these data, the distance between stations can be determined to an accuracy of about six inches in 20 miles.

After distance measuring was completed, Mr. Chapman would set up a theodolite to measure the vertical and horizontal angles between the previously occupied station and the forward station. Then he would read off angles to neighboring peaks.

The same procedure was repeated at each observation point. The engineers aimed at measuring four traverse legs each working day, thus covering about 60 miles of traverse. Fuel caches were therefore spaced at this distance and the daily camp was established at each cache by the standby helicopter. All operations had to be closely co-ordinated.

43 Sites Occupied

Forty-three observation sites were occupied during the 32 days of Topo South, and 25 sites were occupied during the 25-day Topo North. Average distance between sites was about 20 miles.

Of the total 57 days of the project, 22 were "working days." Nonworking days were the result either of inclement weather or delays caused by the difficult logistic support.

Brass geodetic tablets were set into the rock at 33 Topo South and 17 Topo North sites. These markers are numbered, and their altitude, latitude, and longitude will be available for use of future surveying parties.

Highest point occupied during the project is believed to have been Mt. Usher, at about 11,500 feet.

Geologists Study Antarctic Rocks

By Herbert B. Nichols
The Christian Science Monitor
Washington

Nearly a ton of Antarctic rock specimens, including a 70-pound meteorite, have been sent to the United States Geological Survey for laboratory study.

The large meteorite, which is believed to be the first sizable authenticated meteorite found on the polar continent, was discovered when scientists of the survey were conducting field studies during the austral summer just ended.

A much smaller object weighing about two pounds, which might have been meteoritic, was reported from Cape Denison, Adelie Land, by Sir Douglas Mawson, leader of the 1911-14 Australian expedition. There is no confirmation of that find in the international meteorite catalogue, but a detailed chemical and microscopic examination supports the Mawson find.

There is no doubt about authenticity of the recent Survey find. It was made in the eastern Horlick Mountains about 350 miles from the South Pole, during the first systematic geological mapping of the area ever attempted. The work in progress is part of an Antarctic survey program sponsored by the National Science Foundation.

When found the meteorite was in two sections, both lying fully exposed in moraine on top of the continental ice cap, about 100 yards apart.

"Obviously the pieces had been a single mass as the meteorite entered earth's atmosphere," said Dr. Authur B. Ford of Washington, D.C., leader of the group. "Fracture probably took place upon impact with nearby rock outcrops," he concluded. One portion weighs about 50 pounds and the other about 20.

About 10 inches in diameter when reassembled, the Antarctic meteorite is of special interest to scientists because it is a less common type, a "siderolite," part iron and part stone, containing large proportions of both nickel-iron and a silicate.

Initial inspection indicates the silicate to be obivine, an iron-magnesium mineral. A detailed chemical and microscopic analysis will be made in the survey's geochemical laboratories. The olivine is believed to be a magnesian variety because of the high temperature of crystallization this mineral requires.

Meteorites are composed of the same chemical elements as rocks on earth, but they are distinguishable from terrestrial material by their high density, and by their unusual textures and mineral assemblages.

"The eastern Horlick Mountains," said Dr. Ford, "occupy a geologically interesting position near the intersection of two great mountain chains, the trans-Antartic Mountains and the Ellsworth Mountains. The mapping suggests that large blocks of the earth's crust bounded by faults (fractures accompanied by differential displacement) are partly responsible for the mesalike forms characterizing the eastern Horlicks.

"Sandstone, a sedimentary rock, was found this past season in the Horlick Mountains, but none of it was in place. It was found only in glacial erratics, boulders carried along by moving ice from an unknown, though probably nearby source beneath the ice cap.

Bjorn G. Andersen, a glacial geologist, who accompanied Dr. Ford, has carried out studies of the ice cap near the mountains, and rock weathering. He finds that in times past the ice cap there was more extensive than it is today, completely covering and overriding some of the peaks.

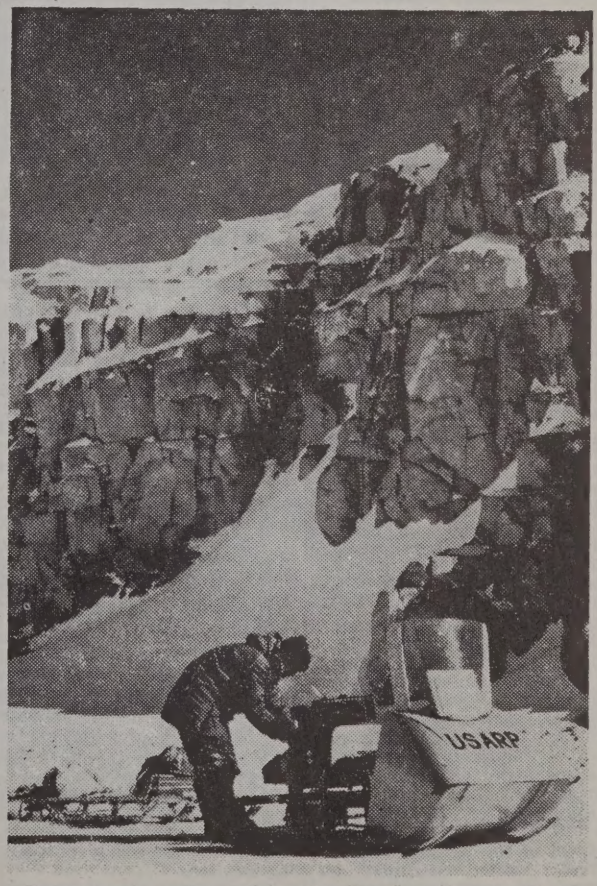
Other members of the party were Raymond L. Elliott, part-time member of the survey from San Diego State College; Dr. Rowland W. Tabor, of Menlo Park, Calif.; and John M. Aaron of Washington.

Eskimo Houses Not Snow

Most Eskimos never have seen a snow house. They live in temporary shelters made of snow only while on the trail. Ordinarily, Eskimos live in homes of stone and sod.

Survey Team Maps Rugged Antarctic Mountain Area

Both photos by United States Geological Survey



Preparing to gather information for mapping the Eastern Horlick Mountain area in Antarctica, geologist Ray Elliott adjusts the carburetor on an Eliason motor toboggan which has nearly replaced dog sleds in this type of survey. In the background are the jagged granite cliffs of Johnson Nunatak, about 350 miles from the South Pole. Operating from a base camp supported by Navy airmen, the survey team, studying Antarctic geology for the second summer, did its mapping and collecting over a 50-mile area.

Byrd Honored by New Zealand

Private Funds Paid for Memorial to U. S. Explorer

The New York Times.

WELLINGTON, New Zealand, March 11—New Zealanders paid tribute today to the memory of Rear Admiral Richard E. Byrd. Despite a gale sweeping the heights above the capital, a large gathering assembled to dedicate a privately sponsored memorial to the United States explorer on the summit of Mount Victoria, which is 630 feet high.

The memorial, which is sixteen feet high and resembles an inclined pyramidal tent, makes a striking feature of the Wellington skyline. It looks across the South Pacific Ocean to the Antarctic, scene of the many explorations Admiral Byrd undertook from New Zealand.

The memorial was unveiled by Prime Minister Keith J. Holyoake. He was assisted by Rear Admiral D. M. Tyree, commander of Operation Deepfreeze, the current United States undertaking in the Antarctic, and A. Leigh Hunt, originator of the memorial project among a group of private New Zealand citizens who were friends of the explorer.

The guest of honor at the ceremony was Mrs. Robert Byerer of Los Angeles, daughter of Admiral Byrd.

Tracey Simpson of Wellington, chairman of the Richard Byrd Fellowship Organization, read cablegrams from President Kennedy, former President Dwight D. Eisenhower and many others and messages from Antarctic stations and the South Pole itself.

Mr. Kennedy's message said the memorial would stand "as a symbol of enduring friendship between the United States, land of his birth, and New Zealand, the country with which he was so closely associated in his great adventures."

Mr. Holyoake said New Zealand was proud to have been of assistance in the explorer's polar work. He said he believed Admiral Byrd's greatest contribution in the Antarctic had been in adapting mechanical and scientific techniques to its conquest.

Above all, Mr. Holyoake said, he will be remembered for the concept of the Antarctic as the "great white continent of peace," an ideal later embodied in the Antarctic Treaty, to which the United States, the Soviet Union and ten other countries are signatories.

Walter Nash, leader of New Zealand's Labor Opposition, described Admiral Byrd as one of the most intrepid men he had met. Admiral Sir John Collins of Australia, on behalf of nations adhering to the Antarctic Treaty, paid tribute to Admiral Byrd's work as the inspiration for the pact, which pledges to restrict the continent to peaceful purposes.

The chairman of the National Council of Churches, the Rev. W. E. D. Davies, dedicated the memorial.

The United States Charge d'Affaires in New Zealand, Miss Ruth Bacon, recalled that four months ago a group of private citizens unveiled a Byrd memorial in Arlington Cemetery, Washington. A similar action by private New Zealand citizens is a deeply moving occasion for Americans, she remarked.

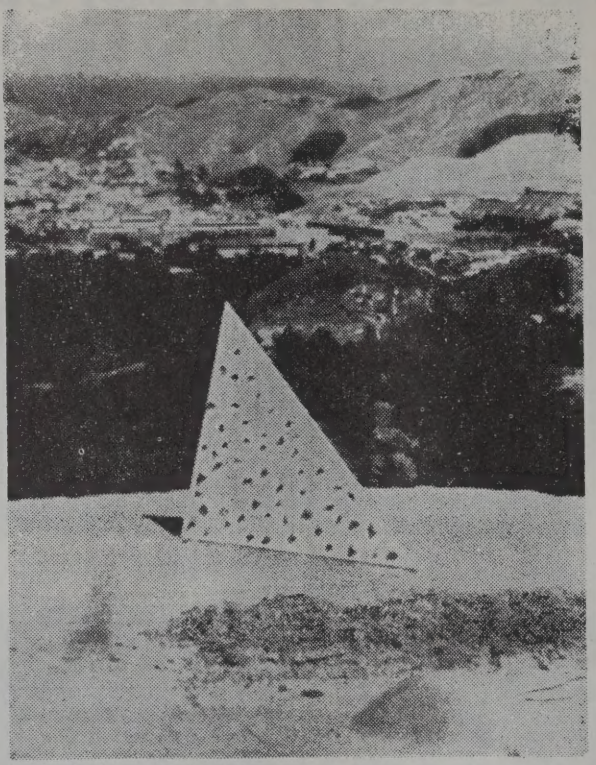
Within the triangular wings of the memorial is a wall of volcanic rock from the Antarctic in which is set a bust of the explorer and plaques recalling his work and the treaty he inspired.

One of the plaques, bearing the title "The Greatest Explorer of the Air Age" reads:

"Richard Evelyn Byrd dedicated his life to peaceful progress for mankind. Outstanding in aviation and exploration; he was a scientist, a humanitarian, a champion of freedom and a great internationalist. His concepts of Antarctica as 'The Great White Continent of Peace' are contained in the Antartic Treaty.

May the spirit of the Treaty endure and spread throughout the World."

It is planned to hold ceremonies annually on the anniversary of his death March 11, 1957. A Byrd fellowship will be awarded annually to school pupils for essays on Admiral Byrd's work and New Zealand-United States cooperation.



View of sixteen-foot-high memorial, resembling an inclined pyramidal tent, looking toward Antarctica, that was dedicated yesterday on Mount Victoria, overlooking Wellington. Structure is partly of rock from Antarctica.

ARGENTINES FLY TO POLE

The New York Times.

BUENOS AIRES, Jan. 7—Two Argentine naval aircraft landed at the South Pole yesterday.

Capt. Hermes Quijada led the 8 hour and 25 minute flight by two DC-3's from the United States scientific base at Ellsworth over 600 uncharted miles of ice to the United States base at the South Pole.

Moss Feeds Reindeer

Reindeer moss is a species of lichen found in great abundance in arctic lands. In many districts it is the chief food of reindeer and caribou.

ANTARCTIC ISSUE ASTIR

Chileans Object to Britain's Colony, but Cheer Philip

The New York Times.

SANTIAGO, Chile, March 4—Emphatic but as yet unofficial protests by Chileans were published here today along with announcement that the British Government was designating part of the Antarctic area opposite South America as a new British colony.

At the same time, Chileans seemed to feel some embarrassment about the protests as they are now honoring Prince Philip, the Duke of Edinburgh, who is here on a tour. He received yesterday Chile's highest decoration, the Medal of the Order of Bernardo O'Higgins, and was cheered by crowds here today. He plans a trip to the earthquake-stricken Valdivia area in the south tomorrow.

London said Friday that the part of what Britain calls her Falkland Islands Dependencies taking in Palmer Peninsula and near-by islands was being made a separate colony. Chile and also Argentina have overlapping claims to the territory. Officials indicated that Chile would send a formal protest to Britain soon.

A New British Colony Set Up in Antarctica

The New York Times.

LONDON, March 2 —While Britain is yielding the rest of her empire, she proclaimed a new colony tonight—much of it under Antarctic ice.

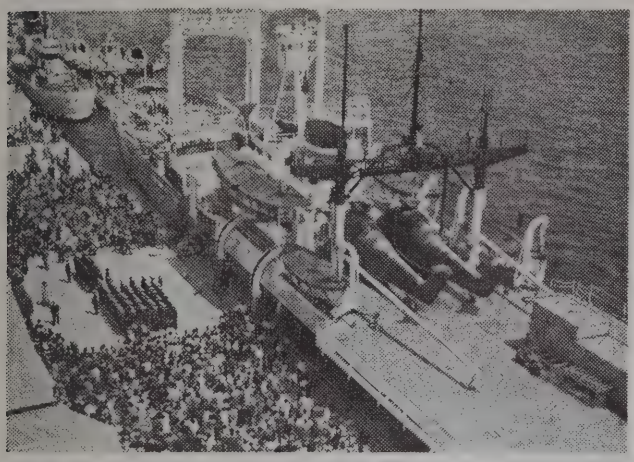
The Colonial Office said the part of the Falkland Islands Dependencies that lies south of Lat. 60 degrees South and between Long. 20 degrees and 80 degees West would become a separate colony tomorrow.

Sir Edwin Porter Arrowsmith, Governor of the Falkland Islands and the Dependencies, will be High Commissioner of the new colony.

The area consists of the British-claimed sector of the Antarctic continent including Palmer Peninusula, which Britain calls Graham Land, and the South Shetlands, South Orkneys and other islands.

This division of territory, the Colonial Office said, is in conformity with the provisions of the Antarctic Treaty, signed in Washington in 1959, which came into force last June 23. Under the treaty the Antarctic is reserved for peaceful purposes and territorial claims remain as they are for thirty years. Argentina and Chile have claimed parts of the new British colony.

Antarctic Survey Ship Soya Returns



Members of the Antarctic expedition aboard the Soya receive a thunderous welcome as they returned to Tokyo

Apr. 17

The Japanese Antarctic observation ship Soya returned to Tokyo Tuesday morning and was berthed at Tokyo's Hinode Pier at 10.45 a.m. amid the thunderous cheers from more than 2,000 persons who were on hand at the port to welcome the ship.

The old, 4,866-ton ice-breaker thus completed her sixth and perhaps the last expedition voyage of 45,000 kilometers to and from the Antarctic continent since she sailed from Tokyo last October 30.

The vessel carried 17 scientists, a part of the scientific team which participated in the sixth or 1961-1962 observation program, and 96 crew members. Another group of scientists who wintered at the Showa Base on Ongul Island, Antarctica, has already returned to Japan by air early this year.

Three "Karafuto" (Sakhalin) dogs which wintered at the base together with scientists also returned aboard the Soya.

The Japanese Government has decided to suspend the observation program, which continued for the past six years, for the time being. On the basis of this decision, the Showa observation base was closed last January.

The Showa base will be ready for reopening at any time.

Capt. S. Aketa of the Soya also hoped that the observation project will be resumed by the use of a "more powerful, new ice-breaker." "The old ship Soya has fulfilled her difficult mission six times despite her small cruising capacity. We hope all achievements and experiences attained by this ship will be developed by a new, large ice-breaker," he said.

Japan's project for scientific exploration of the Antarctic region opened in the fall of 1956 when the first scientific team was sent by the Soya and established the Showa Base on the Ongul Island, Luetzow-Holm Bay.

Since then, five different teams of scientists carried out various scientific observations staying at the base over the stormy winter seasons. A total of 229 scientists and engineers participated in the project, including those 56 who stayed at the base.

Also, 533 seamen of the Maritime Safety Agency took part in the project as crew members of the Soya, carrying personnel and equipment.

The orange yellow hull of the old ice-breaker bore many marks which indicated the rough struggle against the merciless storms and packed ice in the chilly Antarctic waters.

The Soya was built in the Kawanami dockyard of Nagasaki in 1938 for the Soviet Union. As the order was later canceled, it was enlisted as a service vessel of the Imperial Japanese Navy and worked for hydrographic surveys during the last war.

She was used as a repatriation boat during two or three years immediately after the war, and became a lighthouse service boat of the Maritime Safety Agency in 1949.

As is well known, she was converted into a semi-aircraft carrier since she assumed the Antarctic mission. At the present time, she is the biggest vessel of the Maritime Safety Agency with 4,866 tons in displacement. She is able to cruise a distance of 30,000 kilometers at the maximum speed of 12 knots.

Polar Wintering Team Returns

Mar. 16

A Japanese scientific team which wintered at the Showa Observation Base in the Antarctic under the 1961-62 Antarctic exploratory program returned to Tokyo Friday afternoon aboard a JAL plane.

The team was headed by Masami Murayama, lecturer at the Yokohama National University. They left Japan aboard the ice-breaker Soya in November 1960 and stayed at the Showa base for one year beginning in January 1961, carrying out various scientific observations.

The team evacuated the base last January aboard the Soya. They took an airplane from Cape Town, South Africa, on their way home.

The wintering team, the largest ever sent by Japan, marked a large number of scientific achievements during its one-year assignment. One of them is an exploratory trip which extended to the area on the parallel of 75 degrees south latitude. A huge mountain range, named the Yamato range, was discovered during the trip conducted from last October to December.

The Umitaka Maru, a 1,452-ton training boat of the Tokyo Fisheries College, with a survey team of 13 scientists and 43 students of the college aboard returned to Tokyo Friday morning after winding up a five-month survey in the Antarctic Sea.

The survey team conducted investigations of living things, planktons, sea water and collected eight species of fish during their 26,000-mile voyage.

The Umitaka Maru sailed to the Antarctic from December, 1956 to early 1957 to accompany the Japanese Antarctic expedition ship Soya. The training boat will again sail to the Antarctic in 1963 and 65 for Antarctic Sea observation.

SOVIET TO CONVERT ANTARCTIC STATION

The New York Times.

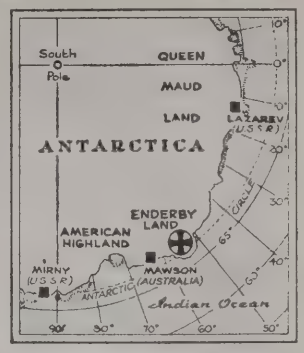
MOSCOW, Jan. 21—Vostok, one of three permanent Soviet stations in the Antarctic, will be converted to a seasonal post this year.

A. A. Afanasyev, chairman of the Northern Sea Route Administration, was quoted today as saying that the Vostok station would be closed for the Antarctic winter of 1962 and would be reopened for the summer season of 1963. The report came from Tass, the Soviet press agency.

Mr. Afanasyev made the statement on a visit to Mirny, another permanent station that is the center of Soviet Antarctic operations. The third station is Novolazarevskaya, on the Princess Astrid Coast.

Vostok, which means east, was named for the ship of Thaddeus Bellingshausen, a nineteenth-century Russian Antarctic explorer. It was one of the first stations established by the Russians in the International Geophysical Year of 1957-58.

The lowest temperature ever recorded on earth—88.3 degrees below zero, centigrade, about 127 degrees below zero, fahrenheit—was recorded at Vostok in the Antarctic winter of 1960.



SOVIET POLAR SITE SHUT

Antarctic Station on Enderby Land Closed for Season

MOSCOW, April 2—The Soviet Union has closed a seasonal Antarctic station on the coast of Enderby Land.

Tass, the Soviet press agency, reported today that the seasonal station of Moodezhnaya (Youth) had completed its aerial observation program in a little known part of the Antarctic.

It was erroneously reported earlier that the post, set up a little more than a month ago, would operate through the Antarctic winter season of 1962.

Sea Shells Give Age Clue

TOKYO (Reuters)—Japanese scientists have found sea shells in the Antarctic that are more than 30,000 years old, indicating that the last glacier period in the Southern Hemisphere kent back that far, it was reported here.

Antarctic Resort Eyed

MELBOURNE, Australia, April 22—Antarctica has almost immediate prospects of becoming a tourist resort, Philip Garth Law, director of the Antarctic division of Australia's External Affairs Department, said today. He said France was investigating the possibility of flying tourist planes from Tasmania to McMurdo Sound base in summer.

Antarctic Ship Leaves Ice

CANBERRA, Australia, Feb. 13 (Reuters)—The Australian Antarctic research expedition's relief ship, Nella Dan, has been freed from pack ice after being trapped for nine days, seventeen miles off Enderby Land.

CANADA TO BUILD TWO-PURPOSE SHIP

Icebreaker Will Also Serve as Cable-Repair Craft

The Canadian Government has called for bids on what is believed to be the world's first combination icebreaker and cable repair ship.

The $7,000,000 vessel, expected to be completed in 1965, is intended to serve as a heavy-duty icebreaker for the Department of Transport and as a cable-repair craft for the Canadian Overseas Telecommunications Corporation.

The 313-foot, twin-screw craft will have diesel-electric propulsion machinery designed to give her a range for 10,000 miles at twelve knots. Trimming and heading tanks to induce movement will enable the vessel to rock loose if she becomes stuck in ice.

When working in heavy ice, an icebreaker rams into the ice, breaks the ice with her weight and then backs off to batter through again.

The craft is to be equipped with an ice stopper to prevent her riding up too far while engaged in breaking operations. She will also have an ice knife to protect her rudder when she backs off.

An ice stopper is a vertical step in the forward part of the hull. An ice knife is a strong horn that projects downward from the stern of the ship and closes the gap between the top of the rudder and the stern to prevent ice from becoming wedged there.

The ship's cable-laying facilities include storage tanks for 400 miles of cable. Cable will be laid and repaired over the bow only.

Her cable-handling equipment will enable the ship to repair all types of submarine cables now on use or plannned in her area of operations. That area includes the Gulf of St. Lawrence, the Atlantic Seaboard and the eastern Arctic.

She will carry a crew of about 100, including flight officers and cable engineers. She will have a helicopter flight deck aft and will carry two motor surf boats and two motor work boats in place of lifeboats.

Plans for the ship were prepared by Gilmore, German & Milne, Montreal naval architects, from designs of the department's shipbuilding branch.

Habitat of Caribou, Reindeer

JUNEAU, Alaska — Caribou and wild reindeer are migratory throughout northern Canada, Alaska, and Siberia. In summer they move close to the sea or into the mountains. In winter they feed on the tundra.

Canada's Marine Service Now Is Its Coast Guard

OTTAWA.

The Canadian Marine Service, operating 241 vessels from Arctic icebreakers to mid-Pacific weather ships, has been renamed the Canadian Coast Guard.

The Coast Guard, like the Marine Service, will be a civilian organization. Sailors will wear uniforms modeled on Anglo-Canadian army battle dress, with berets.

Of the Coast Guard's 241 vessels, about fifty are between 400 and 6,000 tons gross. Ten fully-strengthened icebreakers and seven lighter supply and buoy vessels with icebreaking capability comprise the second largest—after the Soviet—icebreaking fleet in the world.

The Coast Guard fleet includes eight other vessels designed for Arctic service, eleven lighthouse supply and buoy ships, weather ships, lightships, a Great Lakes Research vessel, shallow-draft ships for the Mackenzie River, St. Lawrence ship canal survey vessels, shore-based lifeboats and more than 180 steel landing craft for various types of Arctic use.

Most of the new ships carry helicopters for ice reconnaissance and ship-to-shore operations.

While the Canadian Coast Guard's duties are analogous to those of the United States Coast Guard, greater emphasis is placed on ice clearing and Arctic operations. Last summer these ships carried 110,000 tons of cargo to weather reporting and defense stations in the Arctic.

The service is responsible for lighthouse and buoy tending in coastal and inland waters, it provides ships for marine scientific studies, for air-sea rescue operations, for St. Lawrence Seaway maintenance and for weather station "Papa" in the mid-Pacific.

In planning or construction are eight search-and-rescue cutters, a triple screw 18,000 H. P. icebreaker, an icebreaking cable repair ship, an Arctic depot ship and other vessels.

The Coast Guard ships will have red hulls, white superstructures, and white funnels with red maple leaf and band.

YUKON SURVEY TEAM TELLS OF HARDSHIPS

OTTAWA (Canadian Press) — The story of a Federal survey team that operated in April in the frozen Yukon wilderness under hardships similar to those experienced by early Arctic explorers came to light recently.

The ten-member team traveled 200 miles by dog sled over rugged, remote terrain between Fort McPherson in the Northwest Territories and Dawson City, Yukon. Twice it was isolated by blinding snow storms, with temperatures dipping to 46 degrees below zero.

The last time, food supplies for the team and its thirty-six sled dogs ran out. For four days Indian guides had to hunt moose to feed the party and provide the dogs with 200 pounds of meat daily.

The main concern of the surveyors was feeding the dogs. A man could go without food for some time and survive but the dogs had to be fed to provide the only method of transportation available to the surveyors.

An emergency attempt to bring the party out by aircraft from Dawson City failed due to dangerous landing conditions on a small lake. The surveyors had to improvise signals to stop the pilot from landing.

"We ran out of everything, including salt, tea and sugar," James B. O'Neill, a senior field officer of the Federal Topographical Survey who headed the team, said in an interview.

BOY, 8, TESTS TEETH ON PEARY CRACKERS

TORONTO (Canadian Press) —Eight-year-old Joe MacBean has been getting his teeth into history.

He ate some fifty-year-old crackers left in the Arctic by Admiral R. E. Peary during his dash to the North Pole in 1908-1909.

"Not bad at all," was his pronouncement on the king-size soda crackers.

Dennis Stapleton, 24 years of age, who works for the Defense Department at Alert on the north coast of Ellesmere Island in the Northwest Territories, found the crackers in a food cache while on an expedition.

Mr. Dennis and five friends went exploring to relieve the boredom in the far north. They borrowed a snowmobile and followed Peary's route.

About thirty-five miles west of Alert they stopped in an area where Peary's party had camped to repair their sleds. There they found broken sled runners and a crate bearing the admiral's name.

Farther west they found a can of kerosene and the food. Mr. Dennis sent the crackers to Joe, his half-brother.

ARCTIC SURVEY SET BY ELECTRONIC 'FISH'

OTTAWA, (Canadian Press) —An electronic "fish" suspended from a slow, low-flying helicopter will be used by Canadian during 1962 to chart new shipping channels in the northern Arctic.

The "fish," an aerially-borne echo-sounder, had its first public demonstration recently in the icy waters of the St. Lawrence Seaway near Cornwall, Ont.

The unusual underwater surveying method already has been successfully tested on the inland waterway, now closed for the season.

Canadian Government hydrographers predict that it will hace far-reaching applications in mapping the ice-choked waters of the Arctic.

"It should enable us to do as thorough a survey in the Arctic as in ice-free waters," said R. Michael Eaton, hydrographers of the Mines and Technical Survey Department. "At present this is not possible except with a submarine."

Mr. Eaton, closely associated with the development of the new technique at the plant near Cornwall, said the helicopter would fly about 25 miles an hour at 15 feet above the water level, towing the "fish."

The towing apparatus consists of a raft, which skims along the surface beneath the helicopter. The "fish," containing the echo-sounding transceiver, is suspended from the raft by a wire 10 feet below the surface. It will be possible to make soundings to a depth of 300 feet.

MIRAGE VISITS YUKON

Mountain 'Wasn't There Last Week,' Residents Aver

WHITEHORSE, Yukon (Canadian Press)—It wasn't there last week, residents here insisted as they suspiciously eyed a huge mountain range over Lake Laberge.

Weather official say the five-mile-long mountain, several thousand feet high, is a mirage caused by "cold air inversion" and that it will quietly go away in a few days.

U. S. Picks Arctic Air Strips

OTTAWA, Feb. 28 (AP)—The United States Air Force has picked out about fifty emergency landing strips in the Canadian Arctic islands for military and civilian planes that run into trouble. United States planes are reported to have made survey flights over the sites and the Air Force is said to have asked permission to make survey landings.

CANADIANS PIERCE DEEPER IN ARCTIC

Icebreakers Retraced Path of Early Explorers

OTTAWA, (Canadian Press) —Vessels of the Canadian Marine Service retraced the steps of Arctic explorers in 1961 and sailed farther north than any Canadian vessels had ever penetrated—all in a routine season's work.

This work consisted of:

Installing the world's first automatic weather recording station at Sherwood Head, on the south end of remote Axel Heiberg Island.

Charting the ocean floor and ice formations in the channels around Devon and Bathurst Islands, which are said to have not been visited since early explorers went there 100 years ago:

Traveling a total distance of 161,354 miles and ferrying 110,000 tons of cargo in Arctic waters in seventeen Government vessels and eleven chartered commercial ships.

Opening sea lanes with icebreakers and supplying weather stations, defense installations and Eskimo communities.

The newest and largest Transport Department icebreaker, the John A. Macdonald, pushed northward from Eureka, on Ellesmere Island, into the uncharted waters of Nansen Sound until forced back by eighty-foot-thick polar ice.

In a year-end review issued recently, the Transport Department said there was less ice than usual in most other areas of the Arctic and this helped to make 1961 the most successful year so far for the marine service fleet.

The Macdonald, Labrador and N. B. McLean of the Federal icebreaker fleet discovered many relics of early Arctic explorations. These have been sent to the Maritime Museum of Canada in Halifax.

The items included two anchors and parts of the steam engine from the Victory, which was abandoned in the Gulf of Boothia in 1832 by Sir John Ross.

The Labrador recovered two anchors at Fury Beach on Somerset Island which are believed to be relics of the H. M. S. Fury. The ship, part of the third Parry expedition, was crushed in 1825.

The crew of the N. B. McLean went ashore at Winter Harbor and found a wooden hut, a quantity of traps, ammunition and other articles left in 1908 by the Canadian Government expedition under Capt. Joseph Bernier.

Nordair of Canada Will Begin Weekly Flights to Arctic July 6

June 30

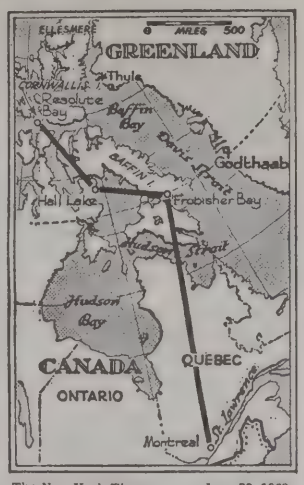
Nordair Ltd., a Canadian regional airline, has announced that it will begin scheduled weekly flights, starting next Friday, to Resolute Bay on the south shore of Cornwallis Island in the Canadian Arctic.

The location, 74 degrees 40 minutes north latitude and 95 degrees west longitude, will be the northernmost point in the world served by an airline, the carrier said. It is approximately 2,300 miles north of Montreal, 200 miles northeast of the North Magnetic Pole and 250 miles within the Arctic Circle.

R. G. Lefrancois, executive vice president of Nordair at its Montreal headquarters, said yesterday that the service to Resolute Bay would be operated year round. The airport is maintained by the Royal Canadian Air Force.

Resolute Bay, according to the airline, has become a center for scientific exploration and oil and mine exploration. Its population consists of eighty-four Eskimos and 130 United States and Canadian citizens associated with the Canadian Air Force, Mounted Police, Government transport and defense agencies and the United States Weather Bureau.

The airline route was recently authorized by Canada's Air Transport Board. Nordair said it would be open to tourists, but apparently expects most of its passengers to be Government, scientific and prospecting personnel.



The New York Times June 30, 1962

New Arctic flight route

A four-engined DC-4 will leave Montreal each Friday at 11 P. M. and arrive in Resolute Bay 1:30 the next afternoon after stops at Frobisher Bay, Baffin Island and Hall Lake on the Melville Peninsula.

The fare, including meal service, will be $225 one way.

The Thule, Greenland, air base maintained by the United States Air Force is about 500 miles east of Resolute Bay and slightly north, at 76 degrees 30 minutes latitude. Thule is not served by regular commercial flights.

AN ESKIMO SURVIVES 6 DAYS ON ICE FLOE

FORT CHIMO, Que. (Canadian Press)—A story of remarkable resourcefulness that kept a plucky Eskimo alive on an ice floe for six days has come out of northern Quebec.

The Fort Chimo Northern Star, a mimeographed newspaper started recently, tells of the perils of Yugini, a Wakeham Bay, Que., Eskimo, and how he met them.

He and another Eskimo named Mark traveled from Wakeham Bay 200 miles southeast along the Ungava coast to hunt seals in Ungava Bay. The day Yugini went adrift Mark had decided to remain ashore at their camp.

Yugini set off across the ice with a sled and twelve dogs. When the floe broke loose he was separated from his sled and a kayak and left with little food.

He killed two dogs, making a blanket from their pelts and feeding their carcasses to the other ten dogs.

Then he performed his most ingenious trick. He killed a large seal, cut out its heart, squeezed oil from the blubber into the chambers of the heart and, by adding a small bit of cloth for a wick, fashioned a lamp-stove.

By burning the lamp in a small igloo he constructed, Yugini was able to keep from freezing. From the seal and another smaller one he killed, he had enough food.

Four days passed before word of his plight reached the northern Service officer and the police here. A Royal Canadian Air Force Dakota search and rescue plane made repeated trips over Ungava Bay. It spotted the floe but did not see Yugini because of a thin mist covering the area.

After six days of drifting, the floe moved back to the pack ice and Yugini walked ashore. He was picked up by hunters and after a few days in the Fort Chimo nursing home was well enough to resume his hunting.

CANADA SEEKS TO AID DISPLACED ESKIMOS

OTTAWA, (Canadian Press) —More than 1,200 displaced Canadians will be the target of a major assistance program starting in the summer of 1962 in the district north of Manitoba, Northern Affairs Department officials said recently.

The displaced persons are Eskimos, victims of a declining Caribou population inland and the end of a short-term nickel mining project at Rankin Inlet on the Hudson Bay west coast, about 800 miles north of Winnipeg.

Many of the Eskimos remaining inland are expected to follow those who have gone to the coast in recent years. The immediate objective of the project will be the expansion of resource-harvesting programs — catching whales, fish, walrus, birds and other food in season, for storage — and development of handicrafts.

Vocational training and perhaps a major contruction project are longer-term possibilities planned to take up the slack.

Canada Planning Grants To Spur Study of North

Scientific research in the Canadian north is to get additional help from the Federal Government, according to the Canadian Weekly Bulletin, an official publication.

Walter Dinsdale, Minister of Northern Affairs and National Resources, has announced plans for a $100,000 program of grants to Canadian universities for northern studies, to northern institutes and to scientific expeditions.

"Canada is a northern nation," the Minister said. "We control a large part of the Arctic and we have a clear responsibility for seeing that it does not remain a blank area on the scientific map."

Baffin Island Explorers

Baffin Island, largest of the Canadian Arctic islands, is for William Baffin, who explored it in 1616, although Martin Frobisher is said to have visited it forty years earlier.

Shackleton's Grandson On Far North Mission

CHURCHILL, Man. (Canadian Press) — Following the adventurous footsteps of his explorer grandfather, Charles E. Shackleton, 20 years of age, of Hampshire, England, has taken off for the north.

The grandson of the late Sir Ernest Shackleton is one of eleven men manning a combined oceanographical, glaciological and meteorological project on Devon Island 1,000 miles from the North Pole.

The group, led by Spencer Appollonio and sponsored by the Arctic Institute of North America, is based at Cape Scarbo on the northeast corner of Devon Island.

CANADIANS TEAM WITH ESKIMO UNIT

Paratroops and Scouts Join in Alaskan Maneuvers

By HANSON W. BALDWIN
The New York Times.

NOME, Alaska, Feb. 16 — Canadian paratroopers and Eskimo scouts treamed up today to defeat any "enemy" threat to Nome.

This wind swept, iced-in, isolated town of 2,000 was the center of a skirmish in Exercise Great Bear, the Army's Alaskan winter manuever.

Most of the 8,000 men "fighting" this ten-day mimic war are struggling across rugged frozen country in the Tanana River Valley in inland Alaska, about 610 airline miles from Nome.

The war scenario put Nome into the spotlight brifely when an aggressor force, represented by Company E of the First Battle Group of the twenty-Third Infantry from Fort Richardson, Alaska, seized positions in the snow-covered gold tailings about four miles from Nome.

The "enemy" was harried by about forty men of the Headquarters Detatchment and a portion of Company A of the First Scout Battalion, Alaska National Guard which has headquarters at Nome.
and its sister battalion, the Second, with headquarters at Bethel, are unusual organizations. Each is composed of almost 600 officers and men—most of them Eskimos, Indians or Aleuts. Their job is to scout the vast coastal regions of Alaska, from Bristol Bay to Barter Island.

The Eskimo scouts reconnoitered "enemy" positions and reported to "friendly" United pany A of Princess Patricia's Canadian Light Infantray—a regiment that has fought beside United States forces in two world wars and in Korea—were sent to aid the scouts.

The Canadfians, with winter sacks, snow shoes, weapons and a section of mortars and one of heavy machine guns, embarked in seven C-119 Fairchild Troop Transport Aircraft of the 349th Troop Carrier Wing, Air Force Reserve, with headquarters at Hamilton Air Force Base, Calif.

They were airlifted from Tanacross to Elmendorf Air Force Base near Anchorage and then for 550 miles over snow-covered mountains and flatlands to Nome. The Canadians were scheduled to parachute to their objective yesterday, but bad weather forced a postponement.

Today a twenty-to-thirty mile-an-hour wind, whipping a sleety snow before it, made jumping impossible without the risk of major casualties. The Canadians were landed instead at Nome Airfield.

The citizens of Nome, which is a drab village on the edge of the frozen Bering Sea and Norton Sound, took the maneuvers in stride. A few of them watched the 119's land at the airfield. but their chief interest seemed to be whether the boys would be allowed in town tonight. Eskimos continued their ice-fishishg in the Bering Sea, more interested in food than in war games.

But United States officers were certain there was considerable silent interest in Siberia, a short distance away across the Bering Strait. Nome is 137 airline miles from Big Diomede Island in the middle of the strait—the nearest land under the Soviet flag.

Soviet electronic monitoring of our radio communications and radar emanations has increased in scope and effectiveness in recent years. There was no doubt in the minds of experts here that Russian listeners "heard" electronically all there was to be heard around Nome today.

Canadian North to Get Mackenzie Territory

The New York Times.

OTTAWA, Jan. 27 — The Government of Canada's vast and undeveloped Northland wound up its semi-annual deliberations this week with a major decision that will alter the map.

The Northwest Territories Council, known as the Little Parliament of the North, approved a proposal to carve by 1964 a new territory out of the 1,300,000 square miles it now governs.

The new unit of 580,000 square miles will be known as the Mackenzie Territory. It lies east of Yukon and contains much of the Mackenzie River Valley.

Like Yukon Territory, which was taken from the Northwest Terirtories in 1898, the new territory will have its own governing Council, a resident commissioner and a civil service administration of its own.

Eight Seal Hunters Rescued

CORNERBROOK, Nfld., March 20 (Canadian Press)—Eight Newfoundland seal hunters were plucked from drifting ice cakes off the northwest coast today, bringing to eleven the number of stranded hunters rescued in two days. The eight men, all in good condition, were from the coastal hamlet of Port au Choix, 150 miles north of here. They were rescued by a United States Air Force helicopter.

RESCUE TEAM SAVES YUKON PROSPECTOR

MAYO LANDING, Yukon (Canadian Press) — George Smashnuk, who spent sixteen hours lying with a broken leg on a remote Yukon mountainside in 60-degree-below-zero temperatures while a companion crawled for help, rested comfortably in a hospital recently.

A ten-man rescue party brought Mr. Smashnuk to safety early after a 24-mile trek through rough bushland.

Mr. Smashnuk and his partner, Al Triggs, were injured in an avalanche while prospecting in the area, seventy-five miles northwest of here.

Mr. Triggs, although injured, dragged himself twelve miles to a logging camp to seek aid while Mr. Smashnuk, his leg broken, in three places, crawled a quarter mile to a cabin.

Five men from the logging camp left for the scene after Mr. Triggs' painful twelve-mile trek. They made Mr. Smashnuk comfortable while they waited for the remainder of the rescue team.

Mr. Smashnuk could not be rescued by helicopter, since the craft could not take off in the extreme cold. The mountainous landscape was too rough for dogsleds.

Dr. Donald Kirk of United Keno Hill Mine, who went to the scene with the rescue party, said it was so cold that sedation solution froze in a needle when he attempted to give it to Mr. Smashnuk.

Mr. Triggs also was in hospital here with what was believed to be ligament damage to his legs.

Harbor Salutes Vanish With the Sealing Ships

HARBOR GRACE, Nfld., June 2 (Canadian Press)—The big sealing ships, returning home from the northern front off the Labrador coast, no longer sail into this old Conception Bay harbor.

As a result, a colorful little ceremony out of the past has disappeared.

More than 100 years ago, as the ships sailed into port, the captain would order, "Shoot the Cathedral," as he passed the big Roman Catholic cathedral. The salute would ring out.

At another point, the order would be, "Shoot Ridley," and again would come the salute. Ridley was the name of the storekeeper who had supplied the ship's provisions.

And the final order, as the ship approached her berth and the captain passed his own home, would be, "Shoot my wife."

CANADIAN SERVICE TRACKS ICEBERGS

Year-Round Forecasts Add to Safety of Shipping

HALIFAX, N. S. (Canadian Press)—Fifty years ago the Titanic sank after ramming an iceberg. Of 2,224 passengers aboard the vessel, 1,513 were drowned.

The disaster was a factor in the formation of an international ice patrol.

The man who directs ice forecasting on the Atlantic and Arctic coasts is William E. Markham, 41 years old, formerly of Edmonton, whose many duties include making sure that an event such as the Titanic sinking will not occur again.

From his staff of six in the Meteorological Branch of the Transport Department year-round reports go out to ships and shipping companies.

"We have three kinds of forecasts," Mr. Markahm explained. "The first is a thirty-six-hour one for ships actually working in the ice fields; the second a five-day report for planning ship movements. Both of these are communicated by radio. The third is a thirty-day forecast for overseas shippers.

"Our main problem is that we still do not know enough about water currents, hence the studies being made by oceanographers. The currents will move the ice, and wind can change its direction. So you have two strikes against you before you start forecasting."

During the winter aircraft check ice in the Gulf of St. Lawrence and around Newfoundland. In summer the check extends from Hudson Bay to Alaska.

From Toronto about fourteen ice observers in chartered aircraft range over thousands of square miles of northern ice.

"During a year the charter plane puts in 2,000 to 2,500 hours—and that's a lot of flying," said Mr. Markham, who has made ten trips himself by sea and air out of Edmonton.

Sea ice forecasting by convoys during World War II followed the formation of an ice patrol. The installation of the distant early warning radar line in the Nineteen Fifties increased safety.

Dog Ailment Kills Huskies

PANGNIRTUNG, Northwest Territories (UPI)—A mysterious dog ailment has delt a heavy economic blow to this Baffin Island Eskimo community. About 800 husky sled dogs, or about 80 per cent of the canine population, have died, depriving Pangnirtung's forty seal hunters of transportation.

HUDSON BAY RICHES IN MINERALS HINTED

OTTAWA (Reuters) — Beneath the waters of Hudson Bay may lie vast untapped mineral wealth, Canadian scientists told 2,000 delegates attending a Canadian Institute of Mining and Metallurgy conference in Ottawa recently.

They noted that oil and sulphur had already been mined off North American shores.

Hudson Bay, they point out, is only a thin film of water over a large expanse of a mineral - rich section of Canada called the Canadian Shield. This precambrian area of ancient rock, which covers almost half of Canada, surrounds Hudson Bay like the broad rim of a giant saucer and contains most of Canada's known mineral wealth.

The bay is actually a 250,000-square-mile inland sea having an average depth of about 70 fathoms! The greatest charted depth in the center of the bay is 141 fathoms.

It is more than 1,000 miles from north to south, with a maximum width of about 600 miles, and is connected with two oceans, the Atlantic and the Arctic.

This great inland sea was discovered by Henry Hudson in 1610 while searching for a northwest passage to China.

It proved a tragic discovery for Hudson. After wintering in James Bay, supplies ran short, the crew mutinied and set Hudson, his son, and several sick men adrift in an open boat. Nothing is known of their fate.

His discovery, however, resulted in England's claim to the territory and the opening up of a vast fur industry.

NEW FOODS SOUGHT FOR ESKIMOS' DOGS

Fish-processing plants in the Arctic may solve one of the increasing problems of the Eskimo population, that of dog food.

Dwindling supplies of natural foods for the Eskimos have made it necessary to hunt greater and greater distances from home, which means carrying food for both dogs and hunters.

In an attempt to make things easier for the Eskimo, a pilot processing system has been devised by the Fisheries Research Board of Canada. The design was carried out at the Board's technological unit at London, Ont., and the plant has been set up in the area of Aklavik, Northwest Territories.

It will handle whitefish, ciscoes and pike taken locally and turn out a nourishing dry product that can be stored and carried conveniently on hunting trips.

The New York Times Jan. 10, 1962

ICE DRILLING: Freighter from Montreal transported giant rig to Winter Harbor on Melville Island (cross), where oil exploration (inset photo) is now under way.

Drillers Push Way to Arctic Through Ice in Hunt for Oil

Exploration Well Is Sunk on Melville Island—1.5 Million Gamble Took Months of Planning for Safety

The New York Times.

EDMONTON, Alberta — Three years ago the search for oil in the northwest swept into Canada's Arctic islands. Attracted by promising geological formations, oil companies made exploration reservations for tens of millions of acres.

Last summer Dome Petroleum Ltd., and nearly a dozen associates began drilling the first exploratory well near Winter Harbor on the south shore of Melville Island, 1,400 miles north of this city.

Back of the operation lay months of preparation, careful provision for safety margins and a dangerous voyage through the Arctic ice packs.

Space and time factors dominated planning for the $1,500,000 gamble in subpolar drilling.

The first problem confronting the operating company, Dome, and the drilling company, Peter Bawden Drilling, Ltd., of Edmonton, was how to cram all their equipment into the 220,000 cubic feet of shipping space offered by the Arctic freighter, Thora Dan.

The equipment included a $750,000 drilling rig, which may be abandoned at the site when the well has been completed; two small buildings in completed form; thousands of feet of pipe and 4,500 drums of fuel and lubricating oils; two motorized landing craft; a twenty-five-ton barge; two tractors; two trucks with semi-trailers; other motor vehicles for special purposes; bulky mud-pumps and piles of smaller equipment and food. There was enough material to fill twenty freight cars.

The other major problem was timing. The Thora Dan, sailing from Montreal, was expected to navigate Davis Strait, between Greenland and Baffin Island, without difficulty.

But, once she entered Lancaster Sound, to follow the northwest passage to Melville, on the western edge of the archipelago, she would have two weeks to beat the ice packs with the help of ice breakers. Any prolonged delay would turn the expedition into a lost cause.

The test came in mid-August, when the steel-reinforced vessel was caught in heavy ice off the southeast tip of Melville, after trying to run the ice without the services of a Canadian Government ice breaker.

Fortunately, the freighter was ahead of schedule and the ice breaker was comparatively near. After a few days' delay, a path was broken through the pack, the Thora Dan moved into anchorage near Winter Harbor, and unloading commenced without delay.

Thorough preparation for work on the site also paid off. Winds rise to eighty miles an hour there and the temperature many drop to 70 below zero. But the drilling equipment is enclosed in a winter housing, men and equipment are fully protected against the rigors of Arctic weather and the operation is linked to Edmonton by air.

Last month the drill reached the original objective of 10,000 feet and the backers decided to continue to 14,000, perhaps deeper.

Although the costs and risks of Arctic operations are high, geologists have estimated that the formations beneath the Arctic islands may hold oil reserves comparable to those of the Middle East. Geological estimates run as high as 100,000,000,000 barrels.

CANADA NAMES ISLANDS

Governor-General and Two Predecessors Honored

OTTAWA (Canadian Press) —Three Arctic islands were recently named after Governor-General George P. Vanier and two previous Canadian Governors-General.

The islands in the Sverdrup Basin of the Queen Elizabeth group off the norhtwest coast of Bathurst Island have been given the names of Vanier, Massey and Alexander. Gen. Vanier's two predecessors were Vincent Massey and Earl Alexander of Tunis.

Vanier Island, most northerly of the three, has an area of 375 square miles; Massey Island, in the center, close to 200 square miles; and Alexander Island, most southerly, 215 square miles. miles.

Canada Eskimos Called World's Costliest Race

Geneva—the world's most expensive citizens are northern Canada's Eskimos, the World Health Organization reports.

They had started to die out, but now their number is steadily increasing. Services rendered to them are expensive because they are so scattered.

To take an emergency patient to a hospital by plane sometimes costs $4,000.

Canada spends $23,000,000 a year on her Eskimos' health.

NORTH GREENLAND SPARED IN ICE AGE

Discovery to Make Possible Emergency Airfields in North Polar Region

By WALTER SULLIVAN
The New York Times.

Feb. 10

At the height of the last ice age, when Manhattan groaned under a continental ice sheet of mammoth dimensions, there appears to have been no comparable glaciation on the land nearest the North Pole.

In fact, parts of the region, along the north coast of Greenland, seem to have been completely bare when summer sun melted the thin veil of snow.

This paradoxical discovery is one of the chief fruits of exploration, carried out in recent years under Air Force auspices, to find emergency airfield sites in the Far North. By careful scrutiny of aerial photographs, more than 100 promising locations have been found.

A number of them have been examined on the ground and found to be smooth, hard and long enough for landings by heavy planes after little or no preparation. One of the heaviest planes in existence, a C-124 Globemaster, has, in fact, landed at such a site on Bronlund Fjord, the northern spur of Independence Fjord, Greenland. There had been no preparation of the ground whatsoever.

One of these sites may, sooner or later, furnish a haven for one of the jet airliners that, with increasing frequency, fly across this region, laden with 100 or more pasengers. Regular airfields there lie far apart and often are closed by local fogs.

Evidence that the continental ice sheet that still blankets most of Greenland did not reach the north coast during the last ice age was gathered by two geologists participating in the Air Force project. They are William E. Davies and Daniel B. Krinsley, both of the United States Geological Survey.

In a newly issued Air Force report they tell of their search, along the coast, for the pink pebbles that constitute the calling card of the great ice sheet. Somewhere in the hinterland there is pink granite that is picked up by the flowing ice and carried to the sea. A search of the coast between Sand Fjord and Frederick E. Hyde Fjord disclosed no such pebbles. The bits of rock on the broad coastal plain seemed purely of local origin.

There was evidence that, at the height of the last, or Wisconsin, ice age, glaciers flowing from the mountain valleys reached across the plain to the sea. However Mr. Davies believes they covered only a limited portion of the coast.

The explanation seems to be the extreme dryness of the climate. Only one place in the world has less precipitation, Mr. Davies said this week in a telephone interview. That is a portion of the coastal desert of Peru, where no rainfall has ever been recorded.

The Greenland ice sheet, roughly two miles thick at its center, is fed by snow falling from moisture-laden oceanic winds. North Greenland is, perhaps, more remote from large open-water areas than any other land in the far north.

The portion of the Arctic Ocean on which it lies is covered with almost unbroken pack ice.

The examination of six sites along the north shore of Greenland, in addition to several inland locations, was made in the summer of 1960. The party, led by Mr. Davis, was based at a camp on Centrum Lake, to the south, and traveled in two helicopters. It was found that runways 5,000 feet long could be made at all of the sites with only a small amount of grading.

Meanwhile, the main Air Force party, at Centrum, was preparing an air strip, using a small tractor and jeep. The vehicles were flown in by a ski-equipped transport plane that landed on the twelve-mile lake before the spring thaw. While in preparation, the emergency strip was used for an unexpected emergency.

The field leader of the project, Stanley M. Needleman of the Air Force Cambridge Research Laboratories, became ill. A radio call for help brought a wheeled transport plane of the Royal Canadian Air Force, based at Alert, which took him to the Air Force base at Thule.

A similar episode occurred the previous year, when a strip was being smoothed out on Polaris Promontory on the northwest coast of Greenland. Mr. Needleman was again in charge and a Danish Government geologist, Dr. Anker Weidick, was a member of the party. Danish Government specialists took part in many of the operations, in part as an acknowledgment of Denmark's sovereignty over the region.

Dr. Weidick developed acute appendicitis and a four-engine Air Force plane made the first landing on the strip to lift him out. His appendix ruptured en route, but he recovered after an operation in the hospital at Thule.

The work at Polaris Promontory was carried out with the support of the Navy icebreaker Atka in 1958 and the Coast Guard icebreaker Westwind in 1959. They anchored in Thank God Harbor, whence their helicopters flew men and equipment to the site. The vehicles were landed by barge and driven twenty-five miles across the gravelly terrain.

The harbor was named by the ill-fated American North Pole expedition led in 1871 by Charles Francis Hall. His ship, the Polaris, a Navy tug, found refuge there, but he died of a stroke. The Polaris, seeking to return south, was skewered by a spear of ice. When the expedition was half unloaded onto a floe, the ship was turned away by the gale and the expedition split in two. Miraculously, both parties were rescued.

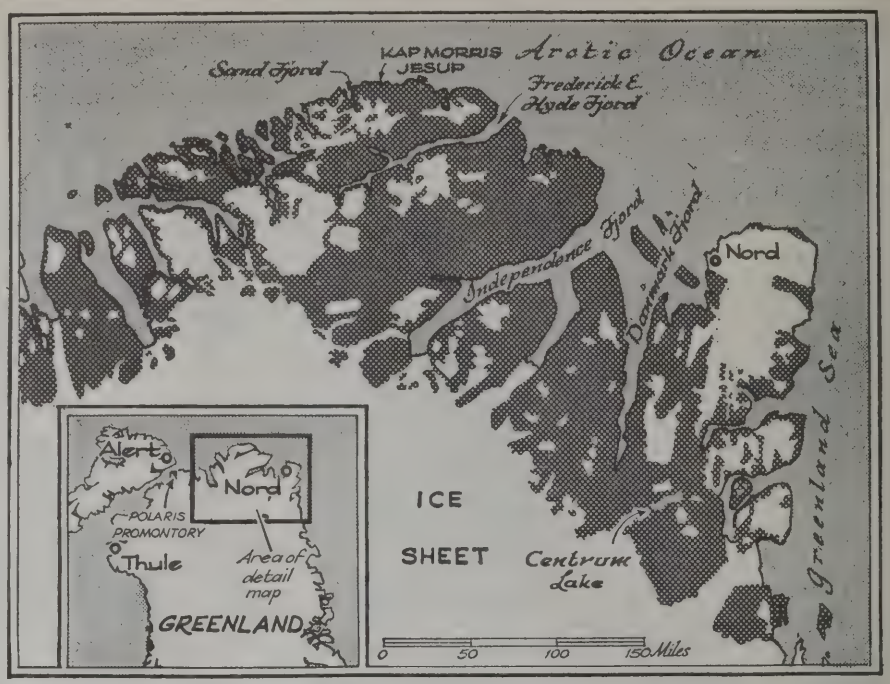
The group that smoothed out an air strip on Polaris Promonotory found Hall's grave in good condition, as well as other relics of the expedition.

Mr. Davies and Mr. Krinsley have sought to establish a timetable of past events along the north coast by dating various heaps of rock, pushed up by former ice advances, as well as deposits left by incursions of the sea. These dates are determined by measuring the extent of radioactive decay in the carbon 14 of seashells embedded in such features.

In this way it has been estimated that the last great ice retreat was some 9,000 years ago. The result, some 8,550 years ago, was a rise of the sea to 265 feet above the present shoreline.

At that time Greenland was so heavily laden with ice that it had sunk considerably into the earth's plastic interior. At the same time, freezing of much of the world's water had lowered sea levels.

Hence, when the ice melted, the oceans rose faster than the land. This, Mr. Davies believes, accounts for much of the 265-foot difference in North Greenland's beach lines of then and



The New York Times Feb. 10, 1962

A survey has found much of north Greenland free of ice (dark areas). Even in the ice age the central ice sheet apparently did not reach a large part of the north coast.

Northernmost Land Area Is Found Suitable for Emergency Landings

U. S. Geological Survey

Kap Morris Jesup, in northern Greenland, typifies the often snow-free areas found in a search directed by the U. S. Air Force

today. He and Mr. Krinsley also report a limited advance of the valley glaciers some 3,700 years ago, followed by a retreat to their present positions.

The Air Force has located more than fifty potential air strip sites in aerial photos of northern Greenland and, in a study of almost 1,000,000 square miles of Canada north of latitude 65 degrees, has found another fifty.

The sites are thought to have potential value, not only for emergency landings, but to enable the Air Force to disperse its aircraft if an attack threatens.

Those sites that have been dragged can handle the largest planes of the Air Force, according to its reports. They could not, however, handle prolonged traffic. On the ground reconnaissance began in 1956 when a four-man party examined six sites, including Polaris Promontory and Centrum Lake.

In 1959, supplies were parachuted at eleven locations in north Greenland. No one visited these caches until the next year, when they served the surveyors well. Some supplies were damaged in the drops or hidden beneath snow, but the procedure was found practicable.

Count Eigil Knuth, a Danish archaeologist, took part in the 1930 operations, finding ancient Eskimo sites on Centrum Lake, but not at the northern tip of Greenland. Earlier studies, however, show that Eskimos have operated along that coast.

Botanical and zoological specimens were collected at Centrum Lake for Danish and American institutions. River beds near the lake were rich in vegetation, despite its almost total absence elsewhere.

The lake proved a fisherman's paradise—until the mosquitos and black flies matured. Arctic char up to eleven pounds were caught readily. Musk oxen were seen, as well as hares, foxes and various birds, but no polar bears.

ICEBERG STUDY SET

Electronic Buoys to Record Data on Labrador Current

WASHINGTON (Science Service)—The experimental use of oceanographic buoys to serve as floating electronic laboratories for recording information on iceberg-clogged lanes is a feature of this year's International Ice Patrol program.

Three buoys will be placed near the Grand Banks, Newfoundland, and will record intensity, strength, direction and volume of the Labrador Current, water temperatures, wind velocities and heat output.

The information will permit the Coast Guard to approximate the inflow of heat and its bearing on the production and distribution of icebergs. It could also allow the forecast of severity of ice conditions within a coming season.

Arctic Warning System Hailed As Air Force Takes Control

COLORADO SPRINGS, Colo., Jan. 5 (AP) — An electronic warning system in the Arctic regions was hailed today as a major deterrent to war as it was turned over to the Air Force by private contractors.

Gen. Laurence S. Kuter, commander of the North American Air Defense Command, called the far-flung alarm system "fantastic * * * a very real strengthening of our armed forces."

"We now have a leg up on the enemy," General Kuter declared. "We'll know almost instantly when an enemy missile has been fired."

Although only two of three installations are operational, the Ballistic Missile Early Warning System was formally accepted in a brief ceremony by the Air Defense Command. A new unit, the Ninth Aerospace Defense Division, was given responsibility for its operation.

Split-second warning of an approaching missile — or any airborne object — can be given by the installations at Thule, Greenland, and Clear, Alaska. A third site is nearing completion at Fylingdales Moor, England.

The radar site at Thule went into operation in October, 1960, and the Clear installation last July. The site at Fylingdales will be in use by next year.

More than 2,400 private contractors, headed by the Radio Corporation of America and the Western Electric Company, started work on the billion-dollar project in January, 1958. They have supervised installation and operation of the sites with the Air Force Systems Command.

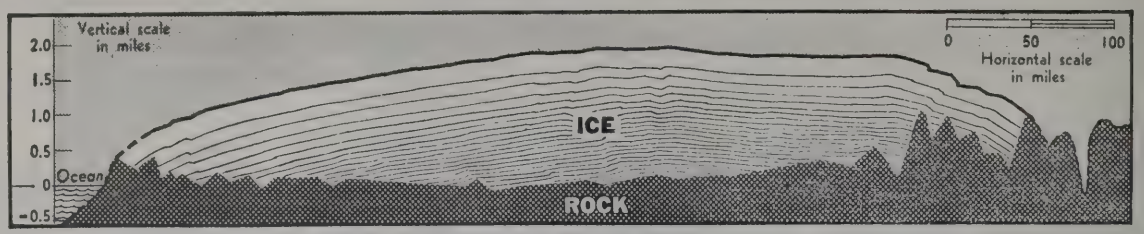
Their radar antennas, bigger than a football field, scan much of Europe, Asia and some 2,000 miles of the Arctic. They are beamed constantly in all directions from which an enemy missile can be fired.

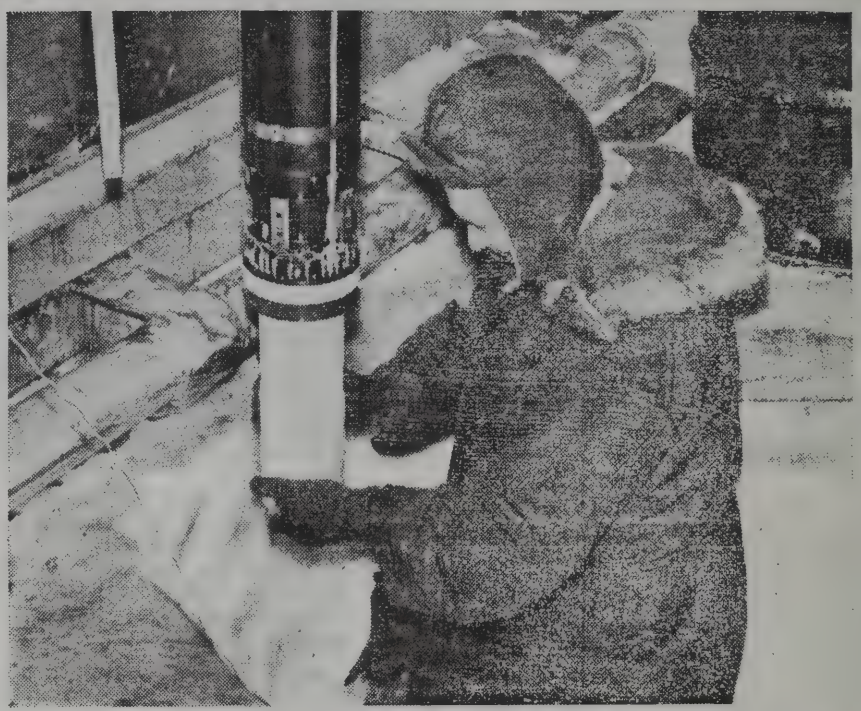
The elaborate device at each installation can spot-track an unidentified object the instant it rises above the horizon. Radar echoes are analyzed by computers that determine the object's position and speed. Its course is calculated, and in ten seconds a warning is flashed to the Air Defense Command.

Polar Bear Far Off Beat

LONDON (Reuters)—A polar bear from the Arctic Ocean ice fields has been sighted in the forests of north-central Russia, about 1,000 miles from the sea, the Soviet press agency Tass reported recently.

PROBING THE MYSTERIES OF GREENLAND'S ICE SHEET





A new type of thermal drill is boring through the Greenland ice sheet. Some believe it may reach ice formed from snows that fell at the start of the ice ages, or that it may release a geyser of water upon which the ice is "floating." The recovery of extremely old ice would be most likely if, as has been proposed, part of the ice formed in the central part of the ice sheet never leaves that region. In this view the annual layers are squeezed out and thinned by the load above them, producing a seaward flow, but still leaving part of the ice in the hinterland. This process is illustrated, above, in a cross section of the Greenland ice sheet, from near Godhavn in the west to Cecelia Nunatak, in the east. The drawing is based on one by French scientists. In the photograph at the left an Army scientist draws an ice core out through the thermal ring at the bottom of rig drill.

INTO THE ICE AGE

Ice Drilling Operation May Reveal Secrets a Million Years Old

By WALTER SULLIVAN

The New York Times.

A new device, capable of melting a hole through more than two miles of ice, is being tested in Greenland. It will, it is hoped, open a new window on what the world was like at the start of the ice ages.

It is drilling a hole through the floor of an ice tunnel at Camp Century, the atomic-powered Army research station carved out of the Greenland ice sheet 140 miles east of Thule. The floor is 5,000 feet thick and the drill is almost 700 feet down.

When it hits bottom, some believe a geyser of water may shoot out, as though from an artesian well. They think the ice sheet is underlain by water. Others suspect there is a layer of slush below the ice or that the ice itself rests on the land beneath.

The boring element of the rig is an electrically-heated ring one inch thick and six inches in diameter. Although it melts its way downward at speeds up to six inches a minute, a central column of ice remains intact. As the rig descends, a pipe, above the ring, envelopes the core of ice and grasps it.

Once this pipe is filled by the core, the rig is hauled out. The core is carefully removed, packed in a plastic bag and set aside for study. At the same time, water, melted by the rim and sucked into a tank above the core barrel, is drained out. Then the rig is lowered again and the drilling resumed.

In this manner it is hoped to extract, from the Greenland and Antarctic ice sheets, samples of ice laid by snowfalls tens or hundreds of thousands of years ago. Some of those in the project believe that it may be possible to obtain ice formed from snows that fell at the start of the Pleistocene, or succession of ice ages, that began perhaps 1,000,000 years ago.

Although the beginning of the Pleistocene epoch is the most recent of the great "horizons" of geologic history, its antiquity is probably the most uncertain. While the milion-year figure is often used, some believe this may be off by as much as 500,000 years.

If drilling can produce a continuous ice core extending from the snows of 1962, on top, to layers laid down when the ice sheet first began forming, it may be possible to count the intervening years in the manner of tree rings. Counting could not be done at a glance, for annual layering is visible to a depth of only about 300 feet. From there on down, analytical methods have to be used.

Several year-counting methods are being considered. One depends on conducting an analysis for two forms, or isotopes, of oxygen whose relative abundance in snow varies from winter to summer. Such analysis has successfully been used to count annual layers.

Ice sheets are thought to have spread south across parts of North America and Eurasia four times during the Glacial Epoch, or Pleistocene. There is no clear indication that this epoch is at an end. Between ice ages the ice vanished from those regions. However it is widely thought to have persisted in Greenland and Antarctica.

The surviving ice sheets are replenished by falling snow and depleted by evaporation, melt-

ing, wind erosion and iceberg formation. Near the coasts, the surface ice flows steadily towards the sea. However, some glaciologists believe the layers in the central part of the ice sheets spread out when squashed by new layers heaped on top of them, but retain their identity. Hence, it is reasoned, very ancient layers may be found beneath parts of the hinterland.

This is most likely where there is a saucer-like depression in the rock beneath the ice, inhibiting any outward flow. The rock beneath much of the Greenland and Antarctic ice is so shaped, as a revealed in the explosion-soundings of recent years. Hence there is at least a chance that ice can be found, in such depressions, that dates from the start of the Pleistocene.

Eventually, Army scientists say, it may be possible to extract enough ancient air from the ice samples so they can be dated by the carbon-14 method. This would be effective for ice up to 50,000 years old and would provide a useful check on the layer-counting techniques. However, at least 300 feet of ice core are needed to provide enough air for such a test.

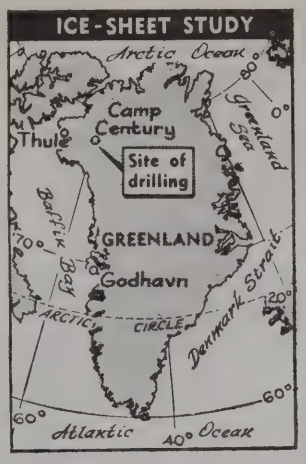
The air will also be analyzed to see if Neanderthal man breathed an atmosphere different in any way from our own.

The Army men are eager to hit bottom and settle the debate as to what lies under the ice. The reason that some believe the ice is "afloat" is that heat flows into the bottom of the ice sheet from the bowels of the earth. Evidence of this has been seen in holes drilled by American and Soviet scientists into ice sheets in both polar regions.

Thus, in the hole at Century, the ice near the surface is at the mean annual temperature of the climate there—some 12 degrees below zero, Fahrenheit. From there to a depth of 400 feet, where the ice was formed from snow that fell late in the seventeenth century, there is a steady but very slight drop in temperature, measured in no more than a few hundredths of a degree.

The reason for this drop, which has been observed in both polar regions, is uncertain, though it may reflect a climate change. Below 400 feet, at Camp Century, the temperature rises steadily. It is thought that it will do so all the way to the bottom because of the heat flow from below.

The drilling project was described recently by Col. William L. Nungesser, director of the Army's Cold Regions Research and Engineering Laboratory at Hanover, N. H., and his colleagues. Their laboratory, set up in recent months, is a merger of the Snow, Ice and Permafrost Research Establishment, which was at Wilmette, Ill., and the Arctic Construction and Frost Effects Laboratory in Waltham, Mass.



FOUR-NATION ACCORD ON SEALING RENEWED

The New York Times.

OTTAWA, Feb. 9—The United State, Canada, the Soviet Union and Japan agreed today to continue to cooperate in protecting the great herds of valuable North Pacific fur seals from indiscriminate slaughter.

Representatives from the four nations ended a three-day meeting of the fifth annual North Pacific Fur Seal Commission with a statement that the program of research and conservation agreed upon in 1957 would b continued in 1962.

This program has been so successful that the herds on the United States-owned Pribilof Islands have been built from a low of 150,000 seals in 1911, when the program began, to more than 1,500,000 last year. The herds on the Soviet-owned Robben and Commander Islands also have been built to the highest level in recent history as a result of what is regarded as one of the most felicitous ventures in international cooperation.

During the 1961 season the United States commercial take of North Atlantic fur seals amounted to 95,974 animals and that of the Soviet Union 10,882.

The fur seal of the North Pacific is not to be confused with the common hair seal.

Early Planes in Arctic

The MacMillan Arctic Expedition of 1925, sponsored by the National Geographic Society, marked the first extensive use of aircraft in polar exploration. A year later, Lieut. Comdr. Richard E. Byrd made the first flight over the North Pole.

FUR FAD THREATENS RARE HOODED SEAL

COPENHAGEN, Denmark (Reuters—To protect the rare hooded seal, threatened by fur fashions and more efficient firearms, the Soviet Union, Denmark and Norway are combining efforts in an Arctic preservation program.

Officials of the Danish Ministry of Greenland affairs say that the increased popularity of seal as a fashion fur, has raised a considerable danger of extinction of the breed.

Herds already show one of the sure signs of approaching extinction. Since 1950, the average age of animals in the seal herds has fallen from 12 to 5 years. And 5 is the critical age, the time when the animals first begin to breed.

Stringent regulations to protect the seals have been introduced in the Arctic areas where the seal breeds, and in most places only the "native population" is permitted to hunt them.

In the case of Greenland, this means that only the local Eskimos may hunt the hooded seal. Professional hunting is banned. The Eskimos operate from Kayaks, which are almost as small as the three-foot long seals.

During the brief Arctic summer, the seals come in herds to the Denmark Straits, off East Greenland, and the ice packs near the islands of Jan Meyen and Iceland.

In 1950, Norway and the Soviet Union agreed to protect the seals in their breeding areas. Similar protection has been given by Denmark.

Despite these measures it is understood that an estimated 10 per cent of the total remaining 500,000 hooded seals are caught each year by hunters.

GREENLAND SPOTTER GETS ANIMAL'S SKIN

ANGMAGSSALIK, Greenland, (Reuters)—East Greenland is probably the only place in the world where money can be had for just keeping one's eyes open—and without working for it.

A local Eskimo seal hunter indicated this when he explained recently how he obtained capital to start up as a hunter.

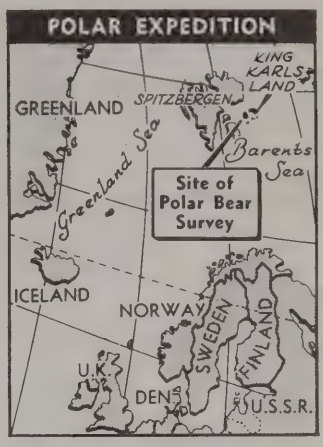
He merely saw a polar bear, and sounded the alarm.

Other hunters quickly went out in their small skin kayaks and within an hour, the bear had been shot and skinned. The skin, the most valuable part of the animal, went to the man who first saw the bear. Although he had taken no part in the hunt.

Along the icy East Greenland coast, the unwritten law of the Eskimo is that the first one to see a wild animal owns it if it can be caught.

Hunters return to camp after struggling fo rhours to catch a seal, and, without protest, hand it to the old woman or the child who saw the animal first.

The system gives widows, children or disabled people a chance, the hunters explain. With such a big reward in sight, everyone in the small communities along the coast keeps a sharp eye seaward. The system also makes for a fair distribution of the meat supply.



POLAR BEAR STUDY—

The American Institute of Biological Sciences has announced that a team of scientists and photographers will visit King Karl's Land, an uninhabited island cluster in the Spitsbergen group, this month and next to conduct a study of polar bears in one of the few places in the Artic where the bears still live in sizable colonies as a pilot portion of a proposed long-range study. Round-the-clock observations will be made during the almost constant daylight hours. Data will be compiled on the bears' food habits, keenness of eyesight, hearing and sense of smell, vocal signals and communication processes and on the behavioral interplay between individuals and small groups. The activity of the entire bear population will be studied to learn if the colony ever functions as a unit in the manner of a wolf pack.

Proposed studies would center on life in the tide pools, zooplankton and phytoplankton in the ocean, algae from the underside of pack ice, island vegetation, soil, water and ice, stomach content of seals and fish, and surface and core samples of pack ice.

Narwhal Has Large Tooth

POINT BARROW, Alaska—The Arctic Ocean narwhal, a sea mammal, has a lower tooth that projects in a spiral that may reach 6 feet in length.

LAKE IN ALASKA, FRESH AND SALT

Boundary Between 2 Decks Apparently Sustained by Freeze of Upper Layer

By WALTER SULLIVAN
The New York Times.

At the northernmost point of the United States there is a double-decker lake. Its top layer consists of fresh water inhabited by typical fresh-water plants and animals; below is salt water with oceanic flora and fauna.

The boundary between the two decks is sharp and appears to be sustained, from year to year, by the freezing in winter of the entire upper layer.

The body of water, known as Nuwuk Lake, is at the tip of Point Barrow, a gravelly arm that extends from the north coast of Alaska. Its dual nature is described in the current issue of Arctic, journal of the Arctic Institute of North America.

Several other lakes of this type have been discovered in the far north, according to John L. Mohr of the University of Southern California at Los Angeles and the four other authors of the report. In most, if not all, cases they appear to have been formed when bits of the sea were enclosed by changes in the coastline.

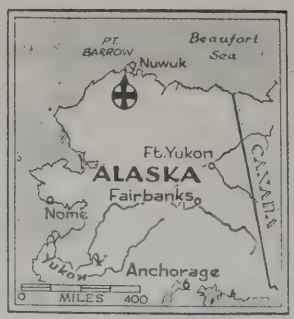
This seems to be the case, for example, with Saels Lake in Greenland. This twenty-five-mile lake appears once to have been a fiord, but changes in the shore and sea level have left it several miles inland. On Kildin Island, northeast of Murmansk in the Soviet Union, Mogilnoje Lake appears to have been formed by the enveloping movement of converging beachlines.

The salt in such lakes is replaced by ocean spray and storm waves. They are fed fresh water by melting snow. Because fresh water is lighter, it normally would form an upper layer, but in most brackish coastal ponds wind action mixes the water sufficiently to prevent any clear-cut separation.

In the frigid climate at Point Barrow, however, the fresh layer is frozen much of the year and any salt within it works down through the ice to the salty layer below.

Nuwuk Lake is 600 feet long and eighteen feet deep. The boundary between its layers is at a depth of some six feet, the salinity at the bottom of the lake being far greater than that in the neighboring Arctic Ocean.

The scientists, based at the near-by Arctic Research Laboratory of the Navy, netted thousands of small creatures from various depths in the lake, sometimes using drifting cakes of ice as platforms from which to operate.



The New York Times March 2, 1962
TWO-DECK LAKE: Top layer of Alaska lake (cross) consists of fresh water, while lower part is salt.

COAST GUARD HELPS SAVE SOVIET SAILOR

WASHINGTON, March 23 (AP)—Seven Coast Guardsmen risked their lives in a hazardous low-level flight through the Aleutian Islands last Saturday to aid a Soviet seaman, the Coast Guard reported today.

The mission was set in motion by an urgent appeal for help from the Soviet motorship Bditelny. A seaman, Boris Kozin, had become trapped between a small boat and a trawler. His chest was crushed and his skull fractured.

Coast Guard rescue centers at Kodiak and Juneau, Alaska, quickly cleared the ship to enter American waters and advised it to set course for St. Paul Island, in the middle of the Bering Sea. A Coast Guard amphibian plane piloted by Lieut. Comdr. John Redfield set out to rendezvous with the vessel at St. Paul, carrying a navy physician, Lieut. Pierre Slightam, and a hospital corpsman.

When the Bditelny arrived, the patient was taken to the Coast Guard station on the island and Lieutenant Slightam performed an hour-long operation.

When the operation was completed, Lieutenant Slightam recommended immediate evacuation to Anchorage. The Russian's injuries required that his body be kept as close to normal sea level pressure as possible. Since no pressurized aircraft were quickly available, the patient was loaded aboard the two-engine amphibian for an 800-mile night flight to Elmendorf Air Force Base with the plane flying at little more than wave-top altitude.

2 ESKIMOS HERE TO APPEAL TO U.S.

Seek Right to Hunt and Be 'Brave' and 'Independent'

The New York Times.

Two Eskimos from the Arctic reaches of Alaska arrived in sunny New York May 7 to petition the United States Government to allow their people to be "great hunters and brave independent people like our grandfathers."

The Eskimos, 58-year-old Guy Okakok and 40-year-old Paul Tiulana, represent Inupiat, an organization of 23,000 Alaskan Eskimos that seeks to protect the aboriginal land and hunting rights that they call Inupiat Paitot.

At an afternoon news conference and an evening meeting sponsored by the Association on American Indian Affairs, Mr. Okakok and Mr. Tiulana declared that their historic rights to certain areas of Alaska were being threatened by the encroachment of the white man, the State of Alaska and the Federal Government.

"Our Inupiat Paitot is our land around the whole Arctic world where we, the Eskimos, live," Mr. Okakok said. "It is our right to hunt food any place and any time of year, as it has always been; our right to be great hunters and brave independent people like our grandfathers; our right to the minerals that belong to the Eskimos in the land we claim.

"All these years we Eskimo hunters have lived peacefully, hunting ducks anytime between May and September. Now we don't any more. We were happy and quiet and always thought we had aboriginal rights until last year when Fish and Wildlife Service agents arrested Eskimos. They were arrested because they shot ducks."

Mr. Okakok said the main concern of the Eskimos was the extensive land area of Alaska north of the Arctic Circle from Barter Island to Point Hope. He said the ancestral rights of his people to this area were recognized when the United States purchased Alaska from Russia in 1867.

Mr. Okakok quoted from a statement by leaders of Eskimo villages who met last year. It said the United States had declared at the time of the Alaskan purchase from Russia that "Congress would define these rights some day." It added:

"The Alaska Statehood Act also says that the state may take over 100,000,000 acres from the public domain in twenty-five years. If Congress does not define our Inupiat rights soon, the twenty-five years will be up and our Inupiat Paitot will be gone. Congress should act now to settle our Alaska native claims."

Mr. Okakok said that, as United States citizens with the right to vote, the Eskimos did not want to be put in reservations "like dogs." The only desire his people had, he said, is to be allowed to use the land as they have always done to feed and clothe themselves.

He said that the land also possessed a great mineral potential and that the Eskimos should some day share the wealth it produced.

WASHINGTON, May 15 (AP) —Two Eskimo leaders presented to Interior Department officials today a plea for Eskimos say are their aboriginal rights.

Guy Okakok of Point Barrow, Alaska, and Paul Tiulana of King Island, in the Bering Sea, were luncheon guests of Secretary Stewart L. Udall and Assistant Secretary John A. Carver Jr.

Mr. Carver invited the Eskimos here when he learned that they were going to New York.

The New York Times
ON ESKIMO MISSION: Guy Okakok at conference.

SOVIET THANKS U. S.

Embassy Voices Appreciation for Help to Injured Sailor

WASHINGTON, April 3 (AP) — THE Soviet Union thanked the United States yesterday for saving the life of an injured seaman.

The seaman, Boris Kozin of the tugboat Bditelnyi (Vigilant), was injured March 17 in the Aleutian Islands. He was caught between a small boat and a trawler and suffered a fractured skull and crushed chest. Coast Guard rescue centers in Alaska cleared the Soviet vessel to enter United States waters.

In a statement, the Soviet Embassy expressed "its appreciation . . . for the careful attention and for the quick and effective aid given to the injured Soviet sailor."

Army Tests New Clothing in the Far North

By HANSON W. BALDWIN
The New York Times.

FORT WAINWRIGHT, Alaska, Feb. 17 — The Army is trying to teach 8,000 soldiers how to live in the Alaskan wilderness at 40 below zero and like it. This is one of the objectives of Exercise Great Bear, a ten-day field maneuver.

Alaska's annual winter "war" between two battle groups is being staged this year in rugged, uninhabited country between Tannacross and Eielson Air Force Base.

The troops so far have encountered relatively mild temperatures, ranging from 20 above to 20 below. But each soldier, struggling through thigh-deep snow in the spruce and aspen forests and skiing across frozen lakes, must be prepared for much colder weather.

The well-dressed soldier in the exercise is puffed like a pouter pigeon with five or six layers of heavy clothing. He wears or carries, to survive, move and shoot, almost 100 items of clothing and equipment weighing more than 100 pounds.

The maneuver is being held in the Fort Greely-Tanana River valley area, one of the two "cold poles" of the Northern Hemisphere. In this region, temperatures of 70 below have been recorded. In fact, the Tanacross-Fort Greely area experienced a spell of 60 below in December.

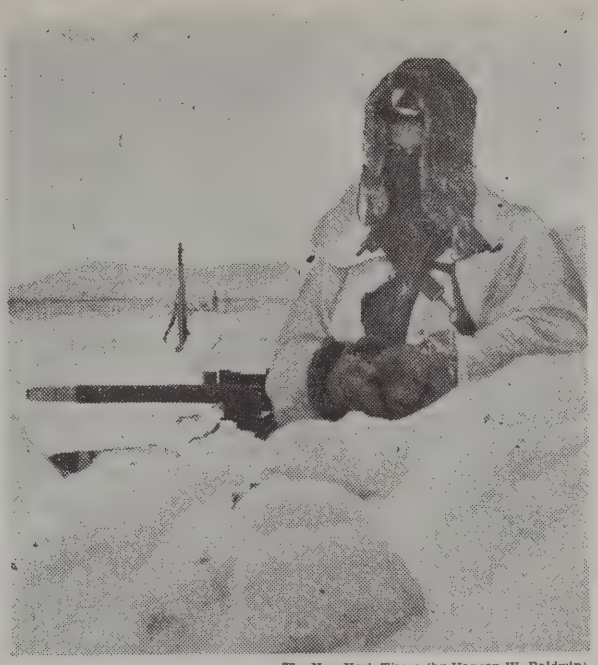
Temperatures shift rapidly, and no well-trained G. I., if he wants to live, can afford to be isolated in the fastnesses of the precipitous foothills or the frozen flatlands of the river bottoms without a mass of bulky gear.

An eighteen-mile wind at 26 degrees below will freeze exposed flesh within half a minute. It is against this kind of danger that the soldier must be prepared.

Today the Army feels the clothing problem has been virtually solved. Modifications and improvements in clothing items are unending. The Quartermaster Corps is even experimenting with the idea of a completely self-contained suit, with built-in chemical or electrical elements to heat and ventilate it.

The chief disadvantages of the present clothing are weight and bulk. If you wear all the layers and the footgear, headgear and mittens, you are muffled up in about thirty-one and a half pounds of wool, cotton mohair, fur, felt and rubber.

The Arctic tenderfoot needs a brief course on how to wear clothes and what to wear. There are so many zippers, buttons, drawstrings, snaps and patent fasteners that this correspondent, aided by anxious G. I.'s, felt like a knight being helped into greaves and breastplate.



The New York Times (by Hanson W. Baldwin)

Well-equipped soldier mans machine gun. Troops were issued gear enabling them to cope with temperatures ranging from 70 degrees below to 30 degrees above freezing.

The principles of Arctic clothing, for military or any other kind of wear, are few but important.

Garments must be loose and baggy at the body's pressure points, with snug fits at angles, wrists and neck to keep body heat in and cold air out. They must be snow, water and wind-repellent, and well ventilated. One must avoid excessive perspiration.

This means that to meet variable temperatures, the layer principle of clothing must be used. The colder it gets the more you put on.

The layer principle and special types of weave, such as waffle-weave underwear, also help to trap insulating air within the clothing.

In the most extreme temperatures, say, 60 below, the G. I. would wear the following garments:

Half-wool, half-cotton "Long John" underwear, shirts and pants. Heavy, all-cotton waffle-weave underwear is preferred by some, but Army experts believe the wool-cotton combination absorbs moisture better. A new dacron, padded underwear, widely used by hunters, is being tested, but laundering appears difficult.

Over the Long Johns the soldier puts on a loose, baggy pair of trousers made of wind-resistant, water-repellent cotton sateen. These have a detachable, heavy inner liner of mohair frieze. A special type of suspenders, crossed over the back just below the neck, holds them up.

Over the suspenders is worn a heavy wool shirt, with the tails hanging out over the pants and liner. A heavy field jacket of cotton sateen with detachable frieze liner, which extends below the hips, can be worn over the shirt.

Another pair of trousers with liner may be worn over the inner pair if the weather is extremely cold.

Topping all is a loose-fitting parka of cotton twill with liner and a voluminous hood, which can be shaped around the face.

The ruff to the hood is the only part of the uniform that uses natural fur. The hood is fitted with a heavy wire grommet, which permits the facial part to be shaped into a tunnel-like aperture.

The wearer breathes and sees through this tunnel. Unless he is facing the wind, when wool face masks or gas masks are sometimes worn for added protection, the hot breath keeps the exposed flesh warm. But it also frosts the ruff of the hood and, in time, may obscure vision.

Small icicles form around the ruff. For this reason wolverine fur, the only kind that can be easily defrosted by a brush of the hand, is preferred. But the soldier who has a wolverine ruff is the exception; there are not enough to go around. Wolf fur, or artificial fur, is substituted.

The Army footgear, perhaps the most important item in the Arctic wardrobe, is probably unique in world armies. The standard boot for extreme cold is what the soldiers call the "Mickey Mouse."

It is a huge, white, rubber vapor barrier boot. One pair of cushion-sole wool, or sometimes cotton, socks are worn inside, and the trousers are laced tightly around the boot tops.

The vapor barrier boot consists of inner and outer sealed layers of rubber with insulating felt and the so-called vapor barrier in between. The boot operates on the vacuum bottle principle. There is no doubt it keeps the feet warm even in 60 below.

Soldiers have broken through ice into freezing water over their boot tops and have remained warm and comfortable without changing boots or socks.

The Mickey Mouse has disadvantages. It is too hot for comfort in weather above 14 degrees.

Canadian troops will wear an adaptation of the Eskimo mukluk, a soft-legging type made of canvas, skin, fur or rubber, and

There are criticisms of this uniform, chiefly that it is bulky and heavy, and that the layer principle requires constant dressing and undressing in variable temperatures.

Many critics say the native skins, or tailor-made special combinations used by some hunters and trappers, offer superior protection with less bulk. The Army admits that in a few cases this may be true.

But it stresses that it is impossible to equip a sizable number of men with fur or skin uniforms. There are not enough animals to supply them, and the price would be exhorbitant.

Not even the Eskimos do much except huddle around fires indoors at 60 below, the Army says, whereas its uniforms have, in tests, kept men alive and reasonably comfortable in the open in static positions for six hours at comparable temperatures.

FREEZERS IN ALASKA

Ratio to Homes Higher Than in Rest of Nation

WASHINGTON (AP)—Alaskans are enjoying frozen foods these days and they are not storing them out on the back porch.

The 1960 Census of Housing shows that of 57,250 housing units surveyed, 14,602 (more than one out of four) had home freezers separate and apart from freezing compartments of refrigerators.

In the rest of the United States the ratio is only one out of six.

Icebound Radar Post in Alaska Scans Air Activities in Siberia

Tin City, Site of Air Force Early Warning Station, Is Near Bering Strait

By HANSON W. BALDWIN
The New York Times.

TIN CITY, Alaska, Feb. 18—A fibre-glass dome atop a desolate snow-covered headland overlooking the frozen Bering Strait marks the westernmost outpost of United States defenses.

Tin City, named for an abandoned tin mine that has not been worked since World War I, is on the westernmost tip of Cape Wales in the Seward Peninsula. Only thirty-two miles from the Soviet-owned Big Diomede Island in the Bering strait, it is a key site in the Air Force early-warning radar chain.

The great radar antenna, ceaselessly searching in the rigid translucent dome on the hilltop, scans the strait and most of the Chutkotski Peninsula in Russian Siberia. Small pips of light mark the take-offs and flight paths of Soviet MIG's from the air strips across the strait and trace their translucent paths across the radarscopes.

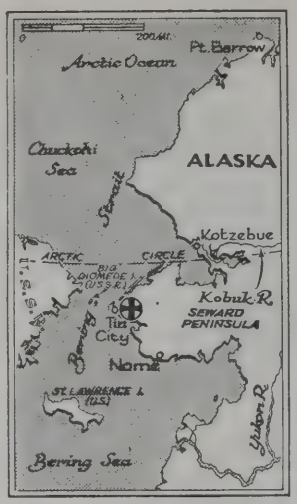
From Provideniya, Uelen, Cape Schmidta and other advanced strips and fields, Soviet planes rise, their progress carefully charted by the electronic eyes of the headland sentinel.

The tell-tale tracks are transmitted by the parabolic communication antennas on a near-by hillside to pertinent ground control centers—to the Alaskan Regional Combat Center at Elmendorf Air Force Base, Anchorage, of the North American Air Defense Command, and, if necessary, to Colorado Springs, headquarters of the command.

Tin City, like all outlying radar sites in Alaska, is far from any center of population. Nome, a village of 2,000, lies far to the south and east. Fairbanks is 530 miles away by plane. The Bering Strait is icebound much of the year; the land is locked in a frozen grip in winter and the only communications are by air.

The strip, which is Tin City's tenuous link to supplies, is what the Air Force calls a "hairy," dangerous one, with a cliff at one end, a mountain at the other and often turbulent winds in between.

Tin City's population, except for Eskimos who are miles away across rugged, rocky tundra, totals seventy-four Air Force men and fourteen civilians. This male community is headed by its own "mayor"—Maj. Carl E. Reichert of Trenton, N. J. He commands the 710th Aircraft



The New York Times Feb. 25, 1962
Site of radar outpost (cross)

Control and Warning Squadron. Its Latin motto is—"primus nuntius"—"first to know."

The civilians are employed by the Radio Corporation of America, which operates under contract to the Government the so-called "White Alice" or tropospheric scatter system of radio communications in Alaska.

Tin City consists of a lower camp of about ten buildings, half buried in snow, and "Hill Top," the upper site on the steep headland overlooking the Bering Strait. The huge parabolic antennas of the communications system rise on a near-by hillside.

Near the air strip is a small control tower and weather station. Scattered across the vast expanse of white wilderness are several contractors' buildings. Near the frozen strait are a few wind-beaten shacks, all that remain of Tin City's days of mining glory.

The Air Force personnel here serve one-year tours of duty. No dependents are allowed. Outside the city there is nothing to do and nowhere to go.

Every effort is made to make the community self-contained. The buildings are connected with heated corridors; an airman can walk from his sleeping quarters to the mess hall to his job without emerging into Arctic cold and howling winds.

The men live well, which is some compensation for their isolation. Two airmen are quartered to each room. The mess hall is dubbed the "The Corall," and is fenced in and decorated with driftwood collected in summer from the shores of the strait.

There are movies five times a week, hobby shops, shuffle board, table tennis, a snack bar, gymnasium, barber shop, post office and a post exchange, which does a $3,500 business each month.

Air Force chaplains drop in by air about once a month, weather permitting, and remain three to five days. The dentist comes twice a year.

In charge of the big radar dome and the eight men attending it on "Hill Top" is Tech. Sgt. Donald E. Bishop of West Springfield, Mass. The men live clustered around the base of the scanning antenna, which they almost lovingly tend. About once every two weeks one of them goes down to the main camp to do his laundry and get a brief change of environment.

"Hill Top" is more than 2,000 feet of precipitous rocky slope above the lower camp. They are connected by an aerial tramway more than 7,000 feet long. The winds off the Bering Strait, ice on the cables and fog and mist make a tram ride to "Hill Top" an eerie trip.

For twenty-two minutes the car moves steadily upward fifty to 115 feet above a world of iced rock and drifted snow. At each of the ten tram towers an airman reports the position of the car, the condition of the cables and the ice on the towers and sheaves.

As the car rises the world is lost in a swirling shroud of icy fog. The open car dips and sways as the wind howls around a rock cornice. A rain of ice pellets from the cables stings the cheeks of the riders and covers the steel floor. The passengers are isolated in an opaque world of wind, ice and fog.

The tramway is supplemented by a winding road, hard to keep open in winter. The tramway typifies at Tin City, as it does at other radar sites in the Alaskan periphery, the remote and lonely isolation of those men who are "first to know"—the unsleeping guardians of the North American Continent.

Katmai Volcano Is Erupting

KODIAK, Alaska, June 11 (AP)—Katmai volcano, dormant since a violent explosion in 1912, was reported erupting intermittently today. Navy pilots flying off the 6,175- foot Mount Katmai verified that it was spewing ash high in the sky. The volcano, on the Alaska peninsula 100 miles north of Kodiak, is in the Katmai National Monument, known as the Valley of Ten Thousand Smokes.

Alaskan Village Flooded

ANCHORAGE, Alaska, May 20 (AP) — The Kuskokwim River, swollen by the breaking up of winter ice jams, inundated the native village of Aniak today. Aniak has a population of 244 and lies in western Alaska. The United States Air Force evacuated women and children by helicopter to Bethel, 100 miles south.

ESKIMOS PATROL COAST OF ALASKA

Scouts, in National Guard, Report to Army by Radio

FORT RICHARDSON, Alaska (Reuters)—Thousands of miles of Alaskan coastline, some of it almost within shouting distance of the Soviet Union, are guarded and watched over by Eskimo scouts.

As they move out of their winter villages to summer camps and go about their daily round of hunting and fishing, these scouts keep a careful eye out for any "unusual" activity along the coast, whether on land or sea or in the air and report to American Army Headquarters by portable radio.

The scouts are an integral part of the National Guard organization.

Originally organized in 1941 when the United States entered World War II, they were brought into the National Guard in 1949 and now are members of the First Scout Battalion of the Alaska Army National Guard's 297th Infantry. They hold regular armory drills, carry out assigned field duties and take part in winter maneuvers conducted by the Regular Army.

The man who knows most about the Eskimo guard units is Capt. Larkin Byrd Jr. of the United States Army Intelligence Service, who acts as the Regular Army liaison officer with the scouts.

Captain Byrd has traveled some 150,000 miles during the last eighteen months visiting the isolated villages that have guard units.

"The scouts are extremely active and interested in their military duties and are very proud and loyal to their units," Captain Byrd says.

In these villages at least 85 per cent of the eligible men are members of the Guard and they turn out to greet Captain Byrd when he arrives—by aircraft, snowmobile, dog sled, on snowshoes or skis or by umiak—the Eskimo boat made of walrus hide stretched over a frame of driftwood.

Local Eskimo guard units are under the command of a noncommissioned officer, usually one of the village chiefs.

Their National Guard drill hall also serves as a community center and a focal point for village council meetings and social events.

The villages range in size from about seventy inhabitants on the Island of Little Diomede in the Bering Strait to more than 400 in mainland communities.

A-Blast to Dig Alaska Harbor May Be Deferred

By LAWRENCE E. DAVIES
The New York Times.

ANCHORAGE, Alaska, May 6—Project Chariot may well be dead, killed by adverse publicity about its effects on Alaskan Eskimos and their hunting grounds.

This is an educated guess by scientists who have been studying the potential results should the Atomic Energy Commission set off nuclear explosions at Cape Thompson, on the Arctic Ocean above Kotzebue.

For three years, at a cost that will approach $3,000,000 by next fall, the A. E. C.'s committee on environmental studies has been pushing a program of investigations involving about thirty-five projects.

These were to be preliminary to the blasts, to test the feasibility of digging harbors and canals with atomic energy.

By September, it is expected, the studies will be completed. A small group of scientists, including five from the University of Washington and others from the University of Alaska, the Polar Institute of Ohio State University and the Weather Bureau, is at the site.

Others, up to perhaps twenty, will be moving in soon for the summer. At the peak, in 1960, there were eighty-five.

Dr. Norman J. Wilimovsky of the University of British Columbia, reported by radiotelephone that the Cape Thompson weather had been pleasant in the last few days, with temperatures around twenty degrees above zero and shorefast ice extending out about five miles.

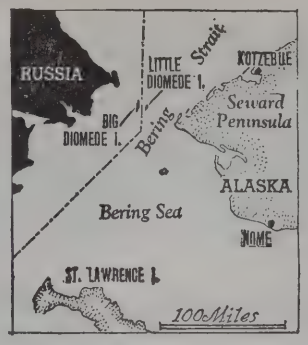
Beyond the shorefast ice shelf was floating ice interspersed with "leads"—cracks more than twenty inches wide extending miles through the ice and of importance to whale hunters and fishermen.

Lying thirty-five miles to the northwest of Cape Thompson is the Eskimo village of Point Hope, with a population of 290. This is the settlement nearest the possible detonation site and the place from which some of the Eskimos' stated opposition to the explosions has emanated.

Dr. Wilimovsky was on hand to make spring ice studies. Other scientists were studying rodents, micrometeorology and the upper air, and other fields.

The committee on environmental studies, headed by Dr. John N. Wolfe, with headquarters at Germantown, Md., plans to have a Project Chariot report ready for the A. E. C. at its meeting in Vancouver, B. C., June 4 and 5. There appeared to be doubt that the committee would recommend either for or against a detonation. There was much speculation that the A. E. C., worried over the publicity about Eskimo opposition, would hold the project in abeyance. One scientists observed:

"I have very grave doubts that they will ever make that



shot."

Another person close to the situation said if the detonation took place it would not be before 1965.

The view was expressed that if a second Panama Canal were to be built a test nuclear detonation would probably be needed at a place—if not at Cape Thompson — where a shoreline existed. Scientists would want to demonstrate the feasibility of canal digging by nuclear energy before the project was begun.

After fifteen months of intensive investigation Dr. Wolfe reported in 1960 that studies near Cape Thompson had produced no evidence that a detonation there would damage the Eskimos' relationship to their environment and livelihood.

According to scientists conversant with the situation, if present levels of radiation at Point Hope were maintained, the Eskimos would have to eat 111 pounds of caribou meat a day for a year to approach the maximum permissible concentration of strontium 90, one of the biological harmful elements in a nuclear explosion. Radiation was no hazard, according to this point of view.

If the Eskimos ate all the caribou they killed, each of them would have to eat three-fourths of a pound a day, these scientists said. If the blast took place it would have to be awfully dirty" to concentrate maximum permissible levels of strontium 90 in this diet, they added.

The biggest problem, a leading investigator said, was what would happen to the birds—murres and kittiwakes—that nest in countless numbers on cliffs nine miles northwest of Cape Thompson. Their fate is of great concern to bird watchers.

Some of the scientists who have worked on Project Chariot, the Arctic phase of Operation Plowshare — the over-all program dealing with peaceful uses of atomic energy—have become critical of the investigation.

Dr. Leslie Viereck, a botanist, resigned from the University of Alaska faculty in the spring of 1961 after having spent two summers and parts of two winters on the Cape Thompson studies.

Dr. Viereck, now associated with the State Fish and Game Department at Fairbanks, agreed that botanical damage would not be great if an explosion were detonated.

"My prime worry is and has been," he said, "that the natives are dependent on local game for subsistence and they have to hunt practically every day to survive.

"Any interruption in their search for a livelihood would be bad. Moreover, lichens, on which caribou feed, get most of their nutrients from the air and are carried, with strontium 90 and other harmful ingredients, into the caribou to be eaten by the natives. Some Alaskan natives get four or five times the world average of strontium 90. Caribou has been found to have twenty times that of domestic cattle either in Fairbanks or in the lower states."

Dr. Viereck accused A.E.C. personnel of having "misused" studies, but he said that "now the A.E.C. is doing a little more investigating."

In some quarters conservationists were charged with keeping the Eskimos stirred up and "giving direction" to the opposition to Project Chariot.

Dr. Viereck said that Eskimos living along the Arctic met at Point Barrow last fall and adopted a strong resolution opposing the detonation.

The site of the proposed blast, where one 200-kiloton and four twenty-kiloton explosives would be shot off simultaneously from depths of 400 and 800 feet, is 180 miles from the Soviet Union. The atomic bombs exploded over Hiroshima and Nagasaki in World War II were of twenty kilotons, equal to the force of 20,000 tons of TNT.

Even after the scientific studies in the Cape Thompson area have been concluded in late summer, the A.E.C. expects to keep three or four observers on hand to investigate fall-out from Soviet nuclear shots.

Soviet Aircraft Alerted By Alaskan Bear Hunt

WASHINGTON, March 24 (AP) — A flight of Alaskan bush pilots on a polar bear hunting foray flew too close to Soviet territory Wednesday and touched off a brief scramble of Russian planes, the Federal Aviation Agency said today.

At least one United States military plane was put up to counter the action, a spokesman said, but the Soviet planes had turned back by that time. The activity was over in a few minutes.

He said he did not know exactly how close the bear-hunting flyiers had come to the border, but it had been "too close."

The pilots, who fly hunters out over the Arctic pack ice this time of year, have been warned not to go that close again, the agency said.

The spokesman said the incident took place in the vicinity of Diomede Island in the Bering Strait, and that the hunters, unaware of the activity on both sides, eventually turned back—"without seeing any planes of either side and without finding any bears," the spokesman said.

3D ARMY POWER UNIT OPERATING IN ALASKA

WASHINGTON — The third nuclear power plant to be put into operation by the Army is now in use at Fort Greely, Alaska, according to the Armed Forces Press Service.

The plant develops 4,000 kilowatts of power, half for heating base installations and half for other purposes. The total output would be sufficient for the needs of a town of about 3,000 population.

Following initial testing, the plant will be studied closely in the development of further peaceful uses of the atom at remote places.

Alaska Defines Nighttime

JUNEAU, Alaska, March 16 (AP)—The Alaska State Senate defined day and night yesterday. Consequently, Barrow will have one night lasting from Nov. 15 to Jan. 27. Barrow is the nation's northernmost community, lying far above the Arctic Circle.

But daytime is something else again. The sun never sets between mid-May and late July.

The new law isn't likely to make much of a change in the habits of the natives, however. There isn't much night life in the little village anyway.

Women Scales McKinley

FAIRBANKS, Alaska, May 22 (AP)—Anore Bucknell, 19-years-old co-ed at the University of Alaska, has become the second woman to climb 20,320-foot Mount McKinley. She and five companions started c imbing the north side of the tallest peak in North America April 16. They completed the climb Sunday. Mrs. Bradford Washburn of Boston was the first woman to climb the mountain. She did it in 1948.

WILDERNESS WINS ARCTIC WAR GAME

Cold-Weather Maneuver by Army Ends in Alaska

By HANSON W. BALDWIN
The New York Times.

ANCHORAGE, Alaska, Feb. 21—Exercise Great Bear, the Army's cold-weather maneuver, ended today with the Alaskan wilderness an implacable victor.

The ten-day, two-sided free maneuver, including some 8,000 men, once again demonstrated the enormous difficulties of cross-country mobility in the Alaskan forests and foothills.

The steep slopes, the deep snow, the spruce, aspen and birch forests and the cold slowed the two battle groups struggling toward each other along a 160-mile strip of rugged land between Tanacross and Eielson Air Force Base.

Before the United States and "enemy" forces made contact in the final days of the maneuver, both sides blazed tortuous main supply routes through the wilderness. But they did this only at the cost of repeated delays and frustrations, and exhausting toil.

The supply routes were scarred with immobilized vehicles — broken down, bogged down, damaged or out of fuel. Once again, as in prior Arctic maneuvers, the Alaskan terrain and climate demonstrated the need for specialized, rugged vehicles; for extensive helicopter and airlift capabilities, and for lightly equipped small units mounted on skis or snowshoes, resupplied by air.

Many of the lessons learned in prior maneuvers were relearned in this one. This was so partly because the war games stressed the training of troops, many of them "cheechakos," or newcomers in Alaska; partly because Exercise Great Bear was a deliberate test of many types of experimental equipment.

Some of the new equipment was highly promising; other items clearly failed in the struggle against nature.

But the maneuver showed once again that the Army still does not have the family of tracked vehicles it requires to meet the challenge of the Alaskan cold and the the sub-Arctic and Arctic terrain.

In this country, combat, whether mock or real, confronts the soldier and the airman with a tremendous number of incompatible factors.

There is general agreement that military operations in an area such as Alaska, with its vast reaches and few roads, must be largely based on airlift and air resupply. Limited tactical mobility on the ground, usually measured in terms of a few miles or scores of miles rather than hundreds of miles, is possible by small units. But no Army would attempt extensive cross-country marches.

Camp used in Exercise Great Bear, the battle maneuver involving 8,000 soldiers that was staged in uninhabited country, between Tannacross and Eilson Air Force Base in Alaska.

Cross-country advance by units of battle-group size, as in Exercise Great Bear, is accomplished (though with great difficulty with present equipment) by a series of leapfrogging operations.

Small units are lifted by helicopter or light plane to key terrain features. Other small units on skis or snowshoes trek cross-country to join them. Tracked vehicles, sometimes preceded by bulldozers, break trails through the wilderness to link up with the airlifted units.

Behind the advance units, engineers struggle to carve out of the wilderness rough roads over which can be hauled the great quantities of gasoline and equipment needed in the Arctic. Helicopters and special vehicles haul fuel, food and supplies, or light planes parachute supplies to isolated units.

The theory of Arctic operations is based on both strategic and tactical air mobility and air resupply. But the execution of the theory encounters all sorts of difficulties never met in milder climates and more settled areas.

Ice fogs, sometimes created by the exhaust of a single airplane taking off or landing, often close an airstrip or obscure a landing area on a frozen lake bed. Extreme cold makes maintenance difficult, in some conditions impossible.

High winds, which reached 70 knots in the mountains last Monday, grounded helicopters and light planes. Severe and rapid weather changes, magnetic storms and other phenomena peculiar to the Arctic limit sometimes prevent airlift and air resupply capabilities.

This means that ground units, airlifted to an isolated position, must carry with them Arctic clothing, tents, sleeping bags, equipment of all sorts and enough food, ammunition and fuel to enable them to survive if the weather closes in and prevents their resupply for a considerable period.

The requirements for human survival in the Arctic add up, no matter how they are calculated, to bulk and weight, which are incompatible with mobility.

The total weight of the average United States infantryman, with all his Arctic gear, including rifle and two bandoliers of ammunition, is about 308 pounds. He wears more than thirty pounds of clothing; much of the rest of the weight he carries in a huge rucksack on his back.

With this load, traveling cross-country, especially through forests or uphill, is a slow business. Skis are of limited usefulness in wooded country. Snowshoes sink into the deep snow and sometimes slip on the slopes.

If a tracked vehicle breaks trail, the men usually ride in or on it, or dump their rucksacks on it. If they follow the trail on foot, the churned-up snow or felled trees make progress on skis impossible, on snowshoes or on foot a hard and sweating torture at two miles an hour. The G. I. in the Arctic must have good wind and long endurance.

Food, equipment, vehicles and weapons also encounter a number of incompatibles.

Tracked vehicles, helicopters and Yukon stoves require tremendous quantities of fuel. An advance guard moving cross-country often becomes progressively weaker the farther it moves from its base of supplies.

Vehicles break down, bog down or run out of gasoline; the greater the distance covered, the more gasoline is required and the harder it is to supply it.

A tent is essential for warmth, but to pitch one in the concrete-like permafrost of this region is often a Herculean operation. The tents must be well guyed against high winds. In wooded regions trees serve the purpose. But in open lands stakes or pegs driven into the hard, frozen ground will almost invariably bend or break.

Special shaped charges of explosives or rocket-driven stakes must sometimes be used, not only for tent pegs but also for guy wires for radio antennas, base plates for mortars and Little John rockets, and so on.

Fuses cause problems in cold weather, and a gunner pressing his cheek too firmly against the rubber eyepiece of a telescope may suffer cold burns in extreme temperatures.

Communications suffer. Transistors, for example, are unreliable at 30 degrees below zero, and, because mercury solidifies at 39 below, equipment with

mercury arc switches malfunctions in extreme cold.

The standard lead-acid battery loses 25 per cent of its effectiveness at 20 below. A specially designed cold-weather battery, on the other hand, must be stored in refrigerated spaces when the temperature rises.

Rubberized material or plasticized nylon becomes hard as a board at 40 below and cracks and shatters if the temperature drops still further.

In Exercise Great Bear some of the new items under test seemed promising; many left much to be desired.

The Army's new quick-serve meal has limited usefulness in the Arctic winter. It is a field ration packaged in six-man and twenty-five-man units consisting of nonperishable, precooked foods, most of them dehydrated.

The six-man package requires four and one-half to seven quarts of water. This is a lot of water when the source is melted snow or ice. This means that the quick-serve meal becomes a slow-serve process.

The new M-17 gas mask appears to work well in this region. A few soldiers have worn it as a face mask in low temperatures.

An infrared heater, which can be used outdoors as a source of directed heat to permit maintenance personnel to work bare-handed in low temperatures, also appears to be promising.

Most of the Army's standard wheeled vehicles appear to have very limited usefulness for cross-country work in wooded or rugged Arctic terrain. So do such specialized experimental units as the "folligon," which rolls on big pneumatic bags, or the "Arctic train," supported by oversized tires. They were bogged down frequently or slipped or slid in the snow, or were simply casualties of the Arctic.

Two Canadian commercial vehicles, the 5½-ton and ten-ton Nodwell Tracked Transportere, did yeoman's service and won considerable praise. They appear to have great promise for heavy cross-country general support work. So does the twenty-ton "musk-ox," only one of its kind in the world, a tracked heavy logistical carrier powered by a 335-horsepower Diesel engine.

Many types of lighter vehicles for both practical and support use were tried out. The Kristi light cargo and personnel carrier, with steel frame and cab and fiberglass body, intended as a squad carrier, appears to have some promise. Rolling liquid transporters—huge tire-like containers for gasoline or other fuel, which can be towed behind a tractor—were useful and appear to be here to stay.

But the United States does not yet have a good replacement for the "weasel," an obsolescent light tracked carrier. A whole variety of replacements have been tried out in recent years for this and other old or ineffective vehicles, but the much-desired family of light cross-country tactical and direct-support vehicles is still conspicuous by its absence.

Maj. Gen. J. H. Michaelis, commanding general of the Army in Alaska, believes, however, that a considerable amount of progress is being made in solving the self-multiplying problems of Arctic warfare.

Exercise Great Bear may, indeed, have marked a kind of watershed in the history of Arctic training and development. So many new items of equipment were tested that it should be possible to choose from among them the prototypes for a new family.

Moreover, a small Canadian troop contingent, participating for the first time in thirteen years, presaged the beginning next year of a program of considerably enlarged Canadian participation.

Today there are three great limiting factors in the military battle against nature.

First, although the Army here has a higher ratio of light planes and helicopters to men than in any other area, the tactical airlift capability is inadequate.

Second, the problem of cross-country tactical mobility has not been solved.

Third, and probably insoluble, is the problem of extreme cold. When the temperature drops to 30 below or lower for extended periods, military effort becomes more and more difficult. Combat at these temperatures will be sporadic and haphazard at best. The struggle will be one not so much against the enemy as to survive.

Alaskan Gold Hunt Turns Offshore

By Reuters

Anchorage, Alaska

Applications were submitted in early 1962 for mineral prospecting rights to more than 32,000 acres of tideland off Nome, Alaska. It could be the start of a new gold rush.

Shell Oil Company started the ball rolling with application for permits to prospect on 5,120 acres of submerged land near Nome, the far northern city that is synonymous with gold to many people.

There is no sign at present that there will be a stampede like the one touched off in September, 1898, with discovery of gold at Anvil Creek. But Shell's application, filed in February, was followed by eight others by mid-March.

Some of the eight are Alaskans and some are Washington State residents. Shell and the eight others asked for rights to prospect on 32,318 acres.

Mining regulations adopted by the State of Alaska in August, 1961, make provision for offshore mineral prospecting permits and for offshore mining leases.

The permits, when issued, allow the prospector two years in which to determine whether there are sufficient quantities of gold present to warrant mining it.

During the two years, the holder of the permit has exclusive rights to prospect in his area, and, at the end of the period, a preference right to convert the prospecting permit into a mining lease.

The Alaskan Government has pointed out that this assures the prospector of "post-strike" rights. This is regarded as a great advance on the position in most of the other 49 states, where a prospector has no rights over land which he is exploring until an actual discovery has been made.

In the two years following discovery of gold at Anvil Creek in 1898, some 18,000 persons flocked into the tent town and surrounding tundra to dig into the yellow-dusted sand, and into the beachland beyond.

So thick, and overlapping were mining claims that one historian wrote: "The landscape from sea to skyline was staked."

It became known as the greatest "poor man's diggings" in the world, because only simple tools such as a spade, pail, and "rocker" were needed to work Nome's golden sands.

What type of equipment and method of sampling Shell will use for the underwater probe off Nome has not been revealed. But mining engineers here have said there must obviously be a departure from traditional methods.

Alaska to Celebrate Year's Longest Day

By Reuters

Anchorage, Alaska

Alaskans will greet the longest day of the year with traditional celebrations befitting the "land of the midnight sun."

At Fairbanks, highlight of the midsummer celebrations will be the annual Midnight Sun Baseball Game. A large turnout of fans is expected to be on hand when the umpire cries "play ball" at 10:30 p.m., June 21.

The baseball game is not the only sporting event taking place under the phosphorescent twilight, without artificial lights. A golf tournament will begin in Fairbanks at the stroke of midnight.

The players shouldn't have any trouble seeing the balls. In Fairbanks, on the longest day of the year, the sun sets at 11:48 p.m. and rises 69 minutes later at 12:57 a.m.

Farther north, in remote northwestern Alaska, residents of Nome will celebrate the festival of the midnight sun in costumes of the "gay 90's," watching Eskimo skin-boat races and Eskimo dancing.

Above the Arctic Circle midsummer comes in the middle of many weeks when, from early May, the sun never really sets and it never gets dark.

At Barrow, for example, the "day" lasts 80 days, with the sun highest in the south at noon and lowest in the north at midnight. The sun sets in August.

On the Arctic Circle, the sun will dip in the horizon at midnight June 21-22, then begin to rise again immediately. Alaskans living at Alatna, Fort Yukon, and Selawik will thus be right on the spot for seeing the sun throughout 24 hours of the day of the summer solstice.

Here in Anchorage, many residents and tourists will go to evening barbecues, picnics, or photographic excursions during the lingering daylight. Even distant landscapes will photograph well at midnight.

Reservations for the June 21-22 midnight flight to Mount McKinley were sold out weeks in advance. This evening commercial flight is run three times weekly during the tourist season to give visitors a chance to see the majestic peak during the longest days of the year.

Starting from Anchorage, the 90-minute, 300-mile round-trip flight past North America's highest peak is made in a 40-passenger propjet of Northern Consolidated Airlines.

In mid-June, the people of Anchorage enjoy more than 20 hours of daylight. But at the winter solstice Dec. 22 they get at best five hours and 28 minutes of daylight.

Arctic Island's Name

Axel Heiberg Island in Canada's Arctic was named by Otto Sverdrup, an explorer, after one of his Norwegian patrons.

LOST U.S. ICE ISLE IS FOUND IN ARCTIC

T-3 Discovered Drifting Off Alaska and Is Reoccupied

By WALTER SULLIVAN

The New York Times.

March 4

T-3, the ice island whose twenty-building camp was abandoned last year, has been reoccupied.

After it had run aground and begun to disintegrate, it vanished. Then it was rediscovered drifting toward the North Pole.

It appears to be headed for another journey around the Arctic Ocean. It has made one, carrying a party of Air Force scientists close to the Pole after they set up camp in T-3 in 1952.

After having completed one circuit of the ocean and started on another, the island ran aground in 1960 in shoal water northwest of Point Barrow, Alaska. Originally more than forty square miles in area, it suffered from tides and winds that broke off acre-sized chunks.

Last fall the Air Force carried out everything that was movable. The camp's immobility and nearness to the elaborate scientific station at Barrow reduced its value as an observatory.

The Air Force asked the Navy's Arctic Research Laboratory at Point Barow to keep an eye on the island. Last May the occupied a newly-discovered ice island far to the northwest, which it named Arlis II.

A month ago planes supplying Arlis II could not find T-3. The Alaskan Air Command also conceded that the island was "lost." Then, in mid-February, a Navy plane spotted it 100 miles northwest of where it had grounded.

On Feb. 17, three small planes from the Arctic Research Laboratory landed a party of two eskimos and a radioman on T-3. The Navy said this week that the three had cleared 4,800 feet of the old air strip.

They have also set up a radio beacon so as not to become lost as the island wanders with wind and current.

Navy and Ai Force polar specialists will discuss next week whether the tation should be occupied during its expected drift deep into the Arctic Ocean. The island is now four miles long and one to two miles wide.

Its temporary reoccupation brings to four the number of scientific stations adrift among Arctic floes. The Russian are manning two, known as North Pole Eight and North Pole Ten. The former has completed part of a circuit of the ocean and is north of Canada.

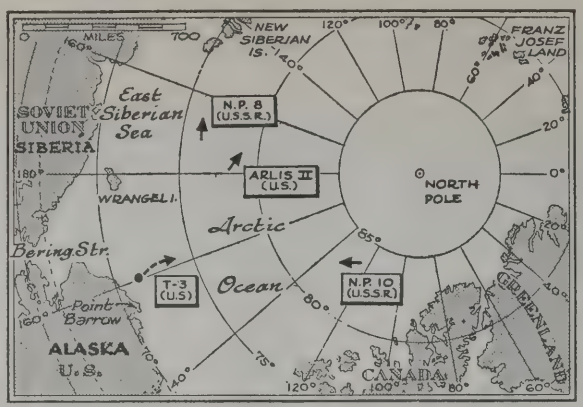
North Pole Ten is said to have been established last summer by the atomic-powered icebreaker Lenin, rated the most powerful in existence. Arlis II has been twice re-supplied by the Navy icebreaker Staten Island.

T-3 was occupied intermittently from 1952 until its abandonment last year. It figured in the polar observations of the International Geophysical Year in 1957-58. It is also known as Fletcher's Ice Island, in honor of Col Joseph O. Fletcher of the Air Force, who commanded the first station there.

The island, roughly 150 feet thick, is a platter of ice far heavier than the typical floes of the Arctic Ocean. Like other ice island, it is thought to have once been attached to an Arctic island, probably Ellesmere.

Summer melting has lowered the surface of T-3 fourteen feet since its buildings were erected. But the ice beneath them has melted little. The results is that each structure is perched precariously on an ice pedestal.

If the camp is to be fully occupied, the buildings will have to be moved, except for the mess hall. That is said to be immovable and would have to be replaced.



The New York Times March 4, 1962

ADRIFT AGAIN: The first American ice island station, T-3, has floated off the shoals north of Alaska and is drifting into circumpolar current that may again carry it past the North Pole. Arrows designate the current locations and directions of drift of the two American and two Soviet stations among the Arctic floes.

Muskeg Defined

A muskeg is a lake of vegetation which has failed to decay entirely due to acidity, low temperatures and the absence of oxygen.

Size of Alaska Moose

The Alaska moose, said to be the largest of North American moose, may weigh up to 1,800 pounds.

'Summit' Meeting —At North Pole

By the Associated Press

Fairbanks, Alaska

Soviets and Americans had a brief meeting at the summit this month—right at the top of the world—and parted the best of friends.

A score or more Soviet natural scientists on an arctic ice island were paid an unscheduled visit May 6 by two United States airmen making a supply flight to this country's Arlis II ice island research station.

Arlis II is about 800 miles northwest of Barrow, Alaska, in the Arctic Ocean. The Soviet-manned island, known as North Pole II, is some 600 miles from Barrow in a direct line between the two.

Max Brewer, director of the Arctic Research Laboratory, told here Thursday of the landing by pilot Bob Fischer and co-pilot Frank Quates, who fly for the laboratory.

Mr. Brewer said the fliers decided to land at the Soviet station when they spotted it for the first time through a break in the fog. The language barrier was a problem, but Mr. Fischer's few words of Russian and sign language bridged the gap. The two spent about 15 minutes there.

About four hours later a Soviet plane flew over Arlis II six times, Mr. Brewer said, lowered its wheels as if about to land, then flew off after those aboard waved greetings to the Americans.

Both the U.S.S.R. and the United States have been carrying on arctic research for a number of years at island stations near the North Pole.

Svalbard Holds Coal Deposits

North of Norway, west of Greenland, lies a group of islands which dim centuries ago the Norwegians named Svalbard—the cold coast. West Spitsbergen is the biggest of the islands, and it is as Spitsbergen that the archipelago is best known abroad.

The sovereignty over this territory was assigned to Norway by the Treaty of Paris in 1920. For more than a century Norwegian whalers, sealers and trappers have operated on Svalbard and in the seas around, but its economic significance today derives from its coal deposits. These are very extensive, but vary considerably in quality and exploitability. The coal as mined today by the Norwegians is of the tertiary order with a high calorific value.

The economic exploitation of Svalbard is in principle open to all nations that are signatories to the Paris Treaty, and at present Russians as well as Norwegians are mining coal there. Since the first tentative mining operations were started at the beginning of this century, probably some 15 million tons of coal have been extracted, mostly since 1920. The Norwegian output has recently been between 300,000 and 400,000 tons a year, the Russian production rather less.

ICE ISLAND USED AGAIN

It Becomes a Laboratory for Research in Arctic

WASHINGTON, Feb. 23 (UPI) —Three men from the University of Alaska's Arctic Research Laboratory have reopened America's floating scientific station known as Fletcher's Ice Island, the Navy announced today.

The station was abandoned four months ago because it merged with coastal ice near Point Barrow, Alaska, and was no longer moving.

A reconnaissance flight Feb. 17 showed that the four-mile-long chunk of ice was moving again, the Navy said. It is now drifting about 180 miles northwest of Point Barrow.

The three flown out to reopen the station are maintaining radio contact with Point Barrow. They have reported that the island landing runway is still suitable for use by heavy planes.

The station was established by the Air Frce ten years ago.

Highway's Climate Varied

Temperatures on the Alaska Highway range from about 90 degrees in summer to 60 below in winter.

SOVIET SHOWS OFF ATOM ICEBREAKER

Captain Tells Visitors Ship Can Reach North Pole

By THEODORE SHABAD
The New York Times.

MURMANSK, U. S. S. R., June 1—The captain of the Soviet atomic ice breaker Lenin said today that his ship had the ability to reach "any point in the frozen Arctic Ocean at any time of the year."

Capt. Boris M. Sokolov added that the capabilities of the 16,000-ton Lenin were shown last year when she was the first ice breaker to navigate the Arctic in autumn and winter, traveling as far as Lat. 81 degrees N.

The second in command on the Lenin, Arseny N. Stefanovich, one of the designers, said she had justified expectations after having covered 30,000 nautical miles, of which 20,000 were through ice.

Mr. Stefanovich, who is now in charge of the ship's technical apparatus, said "she has paid for herself several times." He added that on the basis of her performance it could be expected that "future Soviet ice breakers will be atomic."

The ship's officers talked with thirty foreign newsmen who had been invited to inspect the icebreaker on a day's cruise from her home base of Murmansk, a barren seaport in northern European Russia.

In a few days the Lenin will leave Murmansk on her third navigational season of about five months to open a shipping route through the ice for Siberian lumber and to take a group of freighters along the North Sea Route.

She will also supply Arctic research stations and automatic weather reporting posts established last year on ice floes.

One of the two ice stations, North Pole 10, was set up last fall by the Lenin under heavy ice conditions not usually challenged by icebreakers. It was on the basis of that experience that Captain Sololov said that no point in the Arctic was now inaccessible by sea.

When asked whether the Lenin could "in principle" reach the North Pole, he replied: "Not only in principle but in actual fact."

Mr. Stefanovich said that by extending the navigation season in the Arctic from the previous two and a half months to almost five months, the Lenin had become an asset economically to the Soviet merchant marine. He placed the daily operationg cost of the icebreaker at 5,000 to 6,000 rubles ($5,500 to $6,600).

By contrast, Mr. Stefanovich added, Soviet designers had rejected a plan for a Soviet atomic tanker as uneconomical. The projected 60,000-ton vessel would have had a specially shallow draft of thirty-three feet to enable it to use the Suez Canal.

The Lenin, which joined the Arctic navigation routes of the Soviet merchant marine in 1960, is still running on the original 170 pounds of uranium 235 placed in each of the ship's three 10,000-kilowatt atomic reactors.

A new uranium plant is to be installed after this year's shipping season. The reactors develop 44,000 horsepower, almost twice as much as most modern conventional icebreakers.

Icebreakers are vital to the Soviet Union, where the northern ports may be icebound as long as six months a year. Murmansk is kept ice-free all year by the relatively warm waters of the Gulf Stream drifting around the top of Norway.

The foreign newsmen were conducted on a detailed inspection of the Lenin as she left the thirty-mile-long Kola Fiord, in which Murmansk is situated, and traveled thirty more miles through snow flurries out into the Barents Sea. The latitude of Murmansk, 69 degrees N., is the same as that of the north coast of Alaska.

Up and down steep slippery stairways went the visitors past hissing steam pipes, roaring machinery and complicated control panels watched by young men in sports jackets.

These men, who turned out to be engineers, and several of the Lenin's regular merchant marine officers had received special training at the reactor development center of Obninsk, southwest of Moscow.

One of the officers, Chief Engineer Aleksandr K. Sledzyuk, spoke English. He proudly showed his files of United States technical journals such as Nuclear Engineering and Nucleonics.

An air of informality was evident between the ship's officers and the youthful and unusually well-educated crew. Captain Sokolov, who is 34 years old, said that 85 per cent of the crew members were under 28. There are twenty-three women in the crew of 208.

The captain said crewmen's salaries ranged from 200 rubles ($222) a month for a regular seamen to his own 700 rubles ($777).

ATOMS AGAINST THE ARCTIC: The nuclear-powered Soviet icebreaker Lenin moving through thick ice in the Arctic Ocean. She set up scientific outposts on voyage.

Atomic Icebreaker Opens Siberian Sea Route Early

The New York Times.

MOSCOW, June 27 — The prospect of a four-month Arctic navigation season off northern Siberia opened today for the first time as the season's first ships reached the lumber port of Igarka.

The atomic icebreaker Lenin led the caravan of timber carriers as she broke through the six-foot ice of the Kara Sea into the lower reaches of the Yenisei River to Igarka.

The port usually has only two months to ship a year's output of sawn wood. The Lenin opened the sea route six weeks earlier than usual and is expected to keep it open later than in previous years.

SOVIET SETTING UP BASE ON ARCTIC ICE

The New York Times.

MOSCOW, April 21—The Soviet Union has begun landing men and equipment on a new Arctic ice floe selected as the site of a drifting research station.

The station, known as North Pole 11, is being set up 600 miles north of Cape Schmidt in the Chukchi Sea.

Soviet ice floe stations have been numbered in sequence, starting with the first set up in 1937. Number 8 was evacuated last month after it had begun to break up. Number 10 is still in operation.

Reconnaissance fliers reported that in their search for the new site they had located an abandoned United States station thirty miles northeast of Wrangel Island.

The Russians have apparently mistaken the abandoned station for T-3, which has circled the Arctic Ocean, but has been reoccupied. It is now manned by scientists from the Navy and Columbia University and is much nearer Alaska than the location given by Moscow.

Presumably what the Russians saw is one of three other American floe stations that have been evacuated—"Alpha," manned during the International Geophysical Year of 1957-58, "Charlie," or Arlis I. The last two were occupied briefly in more recent years.

ARCTIC SUPPLY JOB READY TO LEAVE

A Navy Force Will Prepare Harbors in the Far North

May 20

The Military Sea Transportation Service's twelfth annual Arctic supply operation will get under way next week.

The small motor vessel Redbud, one of eighteen units of Task Force 6, will leave here May 28 to prepare the first of several Arctic sites and harbors.

The Navy service's assignment in the Far North is to ferry materials and supplies to defense installations in Labrador and Greenland.

The Redbud will be joined by the Coast Guard icebreaker Westwind and the cargo ship McGraw. After a call at Harmon Air Force Base in Newfoundland, the three ships are due at Goose Bay, Labrador, June 15.

The icebreaker will lead the small convoy north. Off Goose Bay, the civilian crew of the 180-foot Redbud will start preparing for unloading operations by overhauling aids to navigation, repairing submerged fuel lines and getting offshore tanker mooring buoys back into condition.

The task force, which will be supplemented by Army longshoremen for over-the-beach unloading of military supplies, is scheduled to transport 85,000 measurement tons of dry cargo and 2,500,000 barrels of petroleum products.

This year's supply fleet will include three icebreakers, four cargo ships, a store ship, a deep-sea tug and a small ice-strengthened tanker. It will be reinforced by six 16,500-ton tankers operated under contract to M. S. T. S. by civilian crews.

Two other ports, Sondrestrom and Thule, both in Greenland, are tentatively scheduled to be opened to sea traffic early in July.

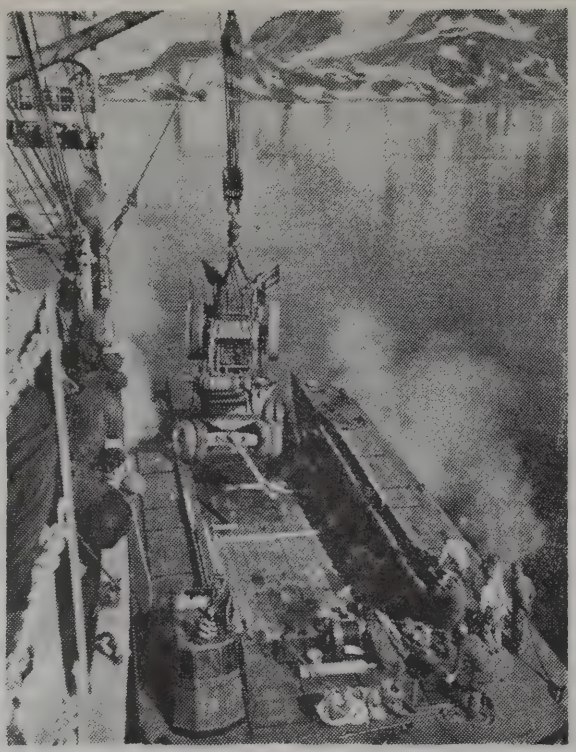
Underwater demolition teams and midshipmen from Annapolis and the Naval Reserve Officer Training Corps will take part in the operation, which is expected to be completed by Nov. 15.

The Navy icebreaker Atka, one of the three in the task force, will spend two months in oceanographic research work off Newfoundland, in Baffin Bay and the Labrador Sea. The Atka will make ice prediction studies and do other research in this relatively unknown region. Part of her work is expected to produce data useful in anti-submarine operations.

Since 1950 the transportation service has delivered nearly 8,000,000 tons of cargo to Air Force bases in the Arctic and to installations for the Ballistic Missile Early Warning System and the Pinetree radar network in Labrador, Greenland and Baffin Island.

Pinetree installations this year will be supplied by Canadian forces, according to Rear Admiral Harry Hull, commander of the service's Atlantic area command here.

The task force will maintain close liaison with Danish forces in Greenland, commanded by Rear Admiral J. Munter, Admiral Hull said.



ALL IN THE DAY'S WORK: Rock crusher is lowered from Navy cargo ship to barge in a Greenland fjord north of the Arctic Circle by troops of the Support North East Command of the Army Transportation Corps. Army unit has been engaged in Arctic operations for last ten years.

Power Unit Set for Arctic

LONDON (Reuters)—A tidal power station will be built in a bay of Kola Peninsula on the Soviet Union's Arctic coast, the press agency Tass reported. The building will be assembled sixty miles away, near Murmansk, and towed to its site.

Beluga Whale 'Sings Along'

The beluga whale is nicknamed "sea canary," the National Geographic Magazine says. While traveling submerged, the mammal frequently squeaks, squeaks, and whistles from its blow-hole. Some of the sounds are audible. Others are of such high frequency that the human ear cannot detect them.

15 DANES DIE AS PLANE CRASHES IN GREENLAND

COPENHAGEN, Denmark, May 12 (AP) — A Canadian charter flight, carrying Danish Government workers and nurses, crashed while making a landing approach in Greenland today. The Danish Ministry of Greenland said fifteen of the twenty-one persons aboard had been killed.

Three of the survivors were the Canadian crewmen. The other survivors and the dead were identified as Danes.

The plane, a Catalina amphibious craft owned by the Canadian Eastern Commercial Airways, had been chartered by the Danish Civil Greenland Air Service for a 220-mile flight from Sondre Strom Fjord to Godthaab in western Greenland. Godthaab is Greenland's administrative capital.

Soviet Develops Snow Road

LONDON (Reuters)—A snow-stamping machine has been invented in the Soviet Union that can lay down an Arctic road at about 1.2 miles an hour, the Soviet Press agency Tass said recently.

Auroras at Hudson Bay

As many as 243 observances of the aurora borealis in a single year have been recorded in the central Hudson Bay region.

DEHYDRATION SAID TO BE ARCTIC PERIL

ATLANTIC CITY (Science Service)—Two Stanford University physiologists, Dr. Terence A. Rogers and James A. Setliff, said recently that the physiological repercussions of of dehydration and a subsequent decrease in blood volume were the most immediate hazards to a survivor in the Arctic.

Dehydration is even worse than freezing or starving and makes a man weak and more susceptible to cold and frostbite, they told a meeting of the Federation of American Societies for Experimental Biology here. The causes of this dehydration are still to be discovered, they added.

Physiological changes were measured in six men exposed to survival situations similar to those encountered by a pilot who had crashed in the Arctic. The men were sent out separately along a frozen Alaskan river, dressed only in a pilot's suit. They were left without food for five days.

The men lost more weight than had been expected, the scientists reported. Many facts pointed to dehydration even though the men drank all of the melted-snow water they desired, they said.

NEW SNOW VEHICLE

Swedes Develop a Versatile Machine for the Army

STOCKHOLM, Sweden — A new military snow vehicle with four-track drive and rear steering has been designed by Swedish Army engineers, according to the Swedish-International Press Bureau.

The new vehicle will replace the United States-made Weasels used by the Army.

The tail steering principle means that the rear part of the vehicle functions as a kind of rudder. It can follow ski troops in any type of terrain regardless of the depth or consistency of the snow, never sinking deeper than about a foot. It can also cross current-free water courses and swamps. On bare ground it can negotiate gradients of up to 35 degrees.

Fluoridation Gains in Canada

HAY RIVER, Northwest Territories (Canadian Press)—This community of 1,200 on the south shore of Great Slave Lake is fluoridating its water supply after the move was approved in a recent plebiscite. Yellowknife, on the north shore, and Inuvik, on the Arctic coast, already fluoridate their water supplies.

A probably very rare cover is this example noting the USS "GLACIER" as the first ship ever to reach Marie Byrd Land in Antarctica. Another cover has been reported (by Bill Schneider, Metuchen, N. J.) with a cachet depicting the GLACIER across the Globe, with Arctic and Antarctic life sketched above and below.

U. S. Ship Cancel For First Landing At Marie Byrd Land

The American Society of Polar Philatelists has reported the release of a special postmark from the 1962 Antarctic Exploration Program. It was applied aboard the USS "GLACIER" (AGB-4) on February 4 with the round postmark "Marie Byrd Land Coast", plus "First Day Cover" between killer bars, dated and used on this day only.

At this time the Glacier was at 74 degrees 21 minutes south latitude, 132 degrees 07 minutes west longitude, lying off Shepard Island.

This is on the Hobbs Coast of Marie Byrd Land, and along the Getz Ice Shelf. No other ship in the world had been in the place before; the island and the other features were named during aerial observation and reconnaissance more than 20 years ago.

Shipboard observations from the Glacier determined Shepard Island to be but one in a series of islands in this coastal area. Both it and one adjacent to it have exposed peaks showing them to be quite probably of volcanic origin.

Departing McMurdo Sound on January 21, the Glacier followed the course of the Ross Ice Shelf. She stopped at Kainan Bay (near the site of the famed Little America Base), then continued around Edward VII Peninsula and into Sulzberger Bay; thence working her way along the Ruppert and Hobbs coast to the site of the "First Day Cover".

During her journey, the Glacier charted the coast, collected weather and hydrographic data, and plotted islands. At three points along the coast personnel went ashore and established ground control stations to serve as fixed positions for future topographic work of the United States Navy's "Operation Deep-freeze".

Since her commissioning in 1955, the Glacier has participated each year in Antarctic operations. Habitually she departs her home port of Boston, Mass. in October, "summers" in Antarctica, and returns in April of the subsequent year.

With her massive armor plated hull, spacious accommodations and scientific laboratories, she is ideally suited to do her dual mission of providing "pathfinder" ice breaking service and supporting the polar scientific exploration-research program.

The Glacier can accommodate 41 officers and scientists and 320 crew members. The vessel's vital statistics include length 310ft., beam 74ft., and total displacement 8600 tons.

Her aviation facilities include flight deck with hanger and two survey helicopters. The Glacier has two 21-ft. propellers mounted on 23-inch diameter shafts; each propeller weighs about 12 tons.

The shafts are driven by two 10,500 horsepower motors which in turn receive power from ten diesel-driven generators.

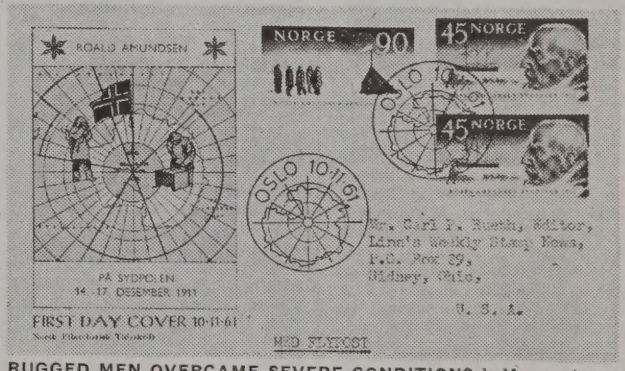
This propulsion plant provides the power required in ice-breaking operations where the ship must accelerate from "stopped" to "All ahead full" in four ship lengths. This is the largest diesel-electric power plant afloat.

To loosen the gripping freezing ice the Glacier has a built-in heeling system which induces an artificial ten-degree roll by rapidly shifting 140,000 gallons of water from side to side.

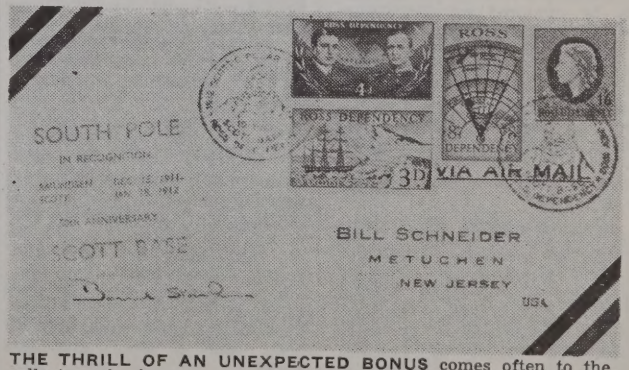
The Marie Byrd Land Coast is the third "one time only" postmark to originate from Antarctica, the first being the "Eights Coast" cancellation and "Admundsen Sea Coast" postmark.

The American Society of Polar Philatelists is composed of specialists of polar interests organized for mutual benefit. A free sample copy of the Society's monthly publication "Ice Cap News" can be secured from editor John J. Herguth—729 First St., Westfield, N. J. for a large size envelope with return postage and address.

Adapting to his purpose a first day envelope prepared for an earlier event, the sender of the above addition to the author's Polar collection combined the cachet, the first Australian Antarctic Territory stamp and a commemorative cancellation to produce a decidedly attractive souvenir. The cancellation notes the Antarctic Treaty First Consultative Meeting held in July 1961 in Canberra, Australia.



RUGGED MEN OVERCAME SEVERE CONDITIONS half a century ago, come December 14, when famed Norwegian explorer Roald Amundsen and his four companions became the first human beings to reach the South Pole. Their accomplishment was commemorated by Norway with the November 10 release of a set of 45 and 90 ore stamps of suitable design, along with the use of an appropriate cancellation.



THE THRILL OF AN UNEXPECTED BONUS comes often to the collector who keeps a supply of stamped, addressed covers in the hands of mail clerks or friends at strategic points in which he is interested. In this instance the thrill came to Bill Schneider of Metuchen, N. J. when an unannounced cachet and pictorial cancel were applied January 18 to covers at Scott Base, Ross Dependency, in tribute to explorers Amundsen (December 15, 1911) and Scott (January 18, 1912). The cancellation is of suitable pictorial design, with a sketch of Scott in the center.

SHARAT J. ROY, 64, CHICAGO CURATOR

Head of Natural History Dies —Expert on Meteorites

The New York Times.

CHICAGO, April 18 — Dr. Sharat Jumar Roy, chief curator at the Chicago Natural History Museum and an expert on meteorites and volcanoes, died yesterday in Billings Hospital. He was 64 years old.

Dr. Roy, who was born in India was a Hindu. He served in the British Indian Army in World War I, studied at the University of London, and came to the United States in 1920 to enroll in the University of Illinois.

He spent a year with the geology department of the New York State Museum in Albany before joining the geology department of the Chicago Museum (formerly Field Museum) in 1925 as assistant curator of geology.

Dr. Roy accompanied the Rawson - MacMillan expedition to Labrador and Baffin Land (now Baffin Island) from 1927 to 1929. In recognition of his exploratory geological work in the Arctic, the United States Geodetic Survey in 1944 named a Baffin Island peak Mount Sharat in his honor.

He was commissioned a captain in the United States Army in 1942 and was assigned to special duty in Newfoundland, Labrador and Baffin Island, and later to combat intelligence work in India and Burma. His army service won him citizenship.

Dr. Roy was named acting chief curator of geology at the museum after he left the Army in 1946, and the next year was named chief curator. In recent years he conducted six field trips to Central America to study volcanoes, once coming within two steps of falling into a volcano crater in Costa Rica as he explored on foot in a heavy fog.

In 1957-58 he spent a year in Europe and India duing research on the world's important collections of meteorites under a National Science Foundation grant. He was admitted behind the Iron Curtain to study meteorites in the Moscow Museum.

Dr. Roy wrote more than thirty scientific papers in the fields of invertebrate paleontology, meteorites and volcanology. He was a fellow of the Royal Geographical Society and a member of the Geological Society of London, the American Association for the Advancement of Science, the Royal Society of Arts, the New York Academy of Science and the American Polar Society.

Surviving is his widow, Elsa.

Rev. Bernard Hubbard, 73, Dies; 'Glacier Priest' Explored Alaska

Jesuit Scientist Was Gifted in Many Fields—Had Crossed Bering Strait in Canoe

The New York Times.

SANTA CLARA, Calif., May 28—The Rev. Bernard R. Hubbard, scientist and explorer who was known as the Glacier Priest, died today of a stroke in his quarters at the University of Santa Clara. His age was 73. He had headed the university's Geology Department since 1926.

Father Hubbard, a member of the Society of Jesus, made thirty-two annual trips to Alaska between 1927 and this year. He had planned to return to Alaska this summer. In recent years he was engaged in research, exploration, writing and lecturing.

A sister, Mrs. Mary Stanley of Oakland, survives.

Authority on Alaska

Father Hubbard was widely considered the foremost authority on Alaska. This may well have been true, for his expeditions to that land and beyond it, deep into the Arctic, were notable for the zest and scholarship he displayed. No small part of his reputation rested on his skill in transmitting the rugged flavor of the North to his writings and lectures.

He was uncommonly gifted for his chosen task. An explorer, geologist, volcanologist, ichthyologist, oceanographer and paleontologist, Father Hubbard commanded respect in scientific and government fields, and, at one time, the highest fee paid for lecture tours.

A powerful, weatherbeaten man, he had never suffered a serious accident in the polar regions. He often explained that he did not court danger for its own sake, but simply because it was an inescapable part of doing what he most wanted to do for science and missionary work.

"Every time I come back," Father Hubbard once observed, "I wonder at the way people rush around without wanting to, wearing unhealthy clothes and getting sick." Much earlier, after his first venture in 1927, he reported how he "got two young fellows built like I am, like a battleship, with the four qualifications you need: a strong back, a strong stomach, a dumb head and a good guardian angel."

Father Hubbard penetrated to the unexplored head of Taku Glacier, flew over the Aniakchak "moon crater" and with eight companions crossed the extremely hazardous Bering Strait in a canoe to prove how ancient Asian tribes could have reached this continent.

The Rev. Bernard R. Hubbard on one of his voyages.

In 1937-38, he spent eighteen months in the Arctic, with Eskimos on King Island. On this and a score of other expeditions, Father Hubbard employed his varied qualities as an explorer; the ability to sense beauty, wonder and humanity against an ample scientific background.

Bernard Rosecrans Hubbard was born in San Francisco, the son of a Protestant minister. He was still a frail youth when he began climbing the Santa Cruz Mountains with gun, camera and dog. The boy was nicknamed "Fossil" Hubbard by fellow students at St. Ignatius College and at the University of Santa Clara. He entered the Society of Jesus in 1908.

Father Hubbard taught science and literature in several colleges until 1921, when he entered the University of Innsbruck in Austria to complete theological studies. He also found time to climb in the Alps, a pastime that won for him the title "Gletscher Pfarrer"—the Glacier Priest.

The impetus to explore Alaska came when Father Hubbard was invited to Santa Clara to write his own textbook, after he had shown profound discontent with those at hand. In the field he studied salmon runs, traced primitive migrations and located buried Stone Age village sites.

He took pride in the fact that he never had a backer for his expeditions. He raised funds, but most of the proceeds from his work went to support Jesuit missions in Alaska.

Among his books were "Mush, You Malemutes" and "Cradle of the Storms." Motion pictures he made included "Aniakchak," "Adventures of Father Hubbard," and "Alaska's Silver Millions."

During World War II, Father Hubbard ministered to the armed forces in Alaska, an area where he had been told, "the boys are more afraid of the country than of the enemy." Officially an auxiliary chaplain, he was an adviser on terrain, weather, clothing and food, as well.

Father Hubbard believed in the value of shocking or at least startling an audience into rapt attention. He never hesitated to use words such as "hell" and "lousy" when they conveyed his meaning.

He aroused wide interest in 1949 with the flat statement "I doubt whether anyone has reached the North Pole on foot." Admiral Robert E. Peary is held to have done it in 1909. Father Hubbard contended that the shifting nature of ice floes made the feat impossible.

Two more sobriquets were pinned on him during his career, and each delighted him. They were the Eskimo "Atatapoc" (Big Father) and the Indians' "Mikwamiwigigik" (Father Who Works in the High Ice).

Father Hubbard was a member of the Explorer, New York Police Anchor, Engineers of Pennsylvania and Pioneers of Alaska Clubs.

Capt. Preston B. Mavor

The New York Times.

WASHINGTON, Jan. 4—Capt. Preston B. Mavor, U. S. C. G., retired, died of a heart attack Sunday in Enid, Okla. He was 53 years old and lived in West Lafayette, Ind.

Captain Mavor graduated in 1931 from the United States Coast Guard Academy in New London, Conn. After tours of duty in the Atlantic, Pacific and the Great Lakes, he became Captain of the Port Office at Newport, R. I., in 1941. Later he held the same post here.

During World War II he commanded the cutter Northland on the Greenland Patrol and the destroyer escorts Camp and Marchand in the Atlantic.

After the war he served for three years as an instructor at the Coast Guard Academy. From 1952 to 1956 Captain Mavor was Chief of the Personnel Division, First Coast Guard District Office, Boston.

Capt. Frank Hurley, 75, Dies; A Photographer and Explorer

SYDNEY, Australia, Jan. 16 (AP)—Capt. Frank Hurley, Australian photographer who accompanied Sir Ernest Shackleton's Antarctic expedition from 1914 to 1917, died at his home today. He was 75 years old.

Captain Hurley was a lecturer and author and had been around the world several times. On the Shackleton expedition he made graphic photos of the ship Endurance when it was crushed by the ice pack. He also served as the official Australian war photographer in both World Wars.

Modern Adventurer

The preface to an article written by Captain Hurley for The New York Times Sunday magazine section on Jan. 27, 1924, alluded to some of the man's dramatic ventures. It read:

"Among modern adventurers Capt. Frank Hurley stands unique for the variety of his experiences. He arrived recently upon his first visit to this country, bringing amazing pictures and tales of primitive life in New Guinea, which he had just explored. But his wanderings have led him to polar regions, as well as to the tropics, into the white man's great war as well as to places where no white man had been."

Captain Hurley was the photographer on Sir Ernest Shackleton's expedition after having participated in a previous one with Sir Douglas Mawson in the Antarctic in 1911. In that period he also had penetrated into unexplored Australia.

SIR JAMES WORDIE DIES

Briton Was Polar Explorer, Geologist and Geographer

CAMBRIDGE, England, Jan. 16 (AP)—Sir James Wordie, explorer, geologist and geographer, died at his home tonight after a long illness. He was 72 years old.

A former master of St. John's College, Cambridge, Sir James was a member of Sir Ernest Shackleton's 1914-17 expedition in the Antarctic. He had been closely associated with polar exploration for forty years. He was chairman of the British National Committee for the International Geophysical Year, 1957.

James Mann Wordie was made a knight in 1957, in recognition of his service as leader of many expeditions to Greenland, Ellesmere Island, Baffin Land and parts of Antarctica.

He was president of the Royal Geographical Society from 1951 to 1954, and in 1952 received the Charles M. Daly Medal of the American Geographical Society in a ceremony here.

COMDR. JAMESON ADAMS

The New York Times.

LONDON, May 1—Comdr. Sir Jameson Boyd Adams, a member of Sir Ernest Shackleton's first expedition to tne Antarctic in 1907, died yesterday at the age of 82.

Commander Adams became second in command of the expedition in 1908 and on his return to England the following year he entered the civil service. In World War I he served with distinction in the Royal Navy. After the war he filled a high post in the Ministry of Labor, and much of his spare time was devoted to boys' clubs.

Pact on Whaling Catch Is Signed by 5 Countries

LONDON, June 6 (AP)—Five countries, including Japan and Soviet Union signed today an agreement sharing the permitted whaling catch in the Antarctic region.

The accord binds the signatories — Britain, Norway and the Netherlands are the others—to respect the limits of annual catches allowed by the International Whaling Commission.

"The arrangements for the regulation of Antarctic pelagic (oceanic) whaling were signed this morning by the Ambassadors of Japan and the Soviet Union, the charge d'affaires of Norway and the Netherlands minister," said the Foreign Officer. "Lord Dundee, Minister of State of Foreign Affairs, signed for Britain."

The new agreement runs for four whaling seasons and sets forth the percentages of the total catch alloted to each country concerned.

Soviet Reports Coldest Spot

MOSCOW (Reuters)—Soviet scientists believe the coldest place in the world lies between 375 and 440 miles southwest of the Soviet Vostok observatory in Antarctica, the Soviet press agency Tass reported. Temperatures there often fall to 130 degrees below zero, Tass said.

Soviet Scientists Hail Orbit

CHRISTCHURCH, N. Z., Feb. 22 (UPI)—Soviet scientists in the Antarctic radioed a message of congratulations to the United States Navy base at Ross Island on the orbital flight of Lieut. Col. John H. Glenn Jr., the Navy said today.

Scientist Discovers How Penguins Keep Feet Warm at -60°

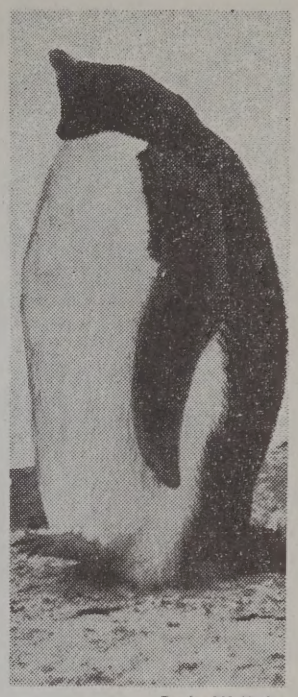
One of the puzzles about those perplexing creatures, the penguins, has been how they keep their feet from freezing.

The penguins that live in Antarctica are well padded with fat and feathers — except for their lower extremities. Yet they spend a good part of their lives standing, walking or sleeping on their "bare" feet in winds that blow at 60 degrees below zero.

Rowland H. Taylor, a New Zealand zoologist, believes that he and other scientists have found the answer. A penguin can rock back on its heels and tail, lifting its feet almost entirely off the ice or frigid ground.

It also has short-circuited connections between its arteries and veins, making for rapid blood flow through the feet. The lumpiness of its soles reduces the area of contact between the foot and the ground and, finally, the feet are heavily padded with callus-like tissue.

Mr. Taylor has photographed Adelie penguins sitting back on their tails and others have observed the same stance in Emperor penguins. Adelie chicks begin to do it when only a few weeks old and it seems to be so inborn, with King penguins, that even those born in the cozy environment of the Edinburgh Zoo still sleep with their toes in the air.



Rowland H. Taylor

IT HELPS: To keep its feet from freezing, a penguin rests on its heels.

Mr. Taylor's report appeared in a recent issue of Antarctic, organ of the New Zealand Antarctic Society. He is with the Animal Ecology Division of the New Zealand Department of Scientific and Industrial Research at Lower Hutt.

WHALES RATED HIGH IN ABILITY TO THINK

WASHINGTON — Whales have brains, and use them well.

This is the substance of a report to the National Academy of Sciences by Dr. Kenneth S. Norris, a University of Los Angeles zoologist, based on observations made on several whaling expeditions in the Pacific, according to NANA.

Pacific pilot whales, which may travel in schools of more than 100, for example, have an unusual hunting formation. They line up side by side in a rank that may stretch well over a mile. When any member of the hunting expedition encounters a school of edible fish, he signals and the entire school gathers for a feast.

These whales also have an ingenious mechanism for seeing that their babies keep up with the fast pace of the adults in a school, the report says.

By sticking close to its mother, but without touching her or moving its own flippers, baby whales are carried along by the water flow pattern between the two.

"Captives give us evidence of a high order of intelligence which places them high on the list of the most advanced animals," the report says. "Their brain volume-body weight ratio is very high. In absolute size their brains may exceed those of humans."

Good brains, the researcher points out, are not confined to particular species of whales. Most of their behavior is difficult to observe.

Norway Whaling Lag Seen

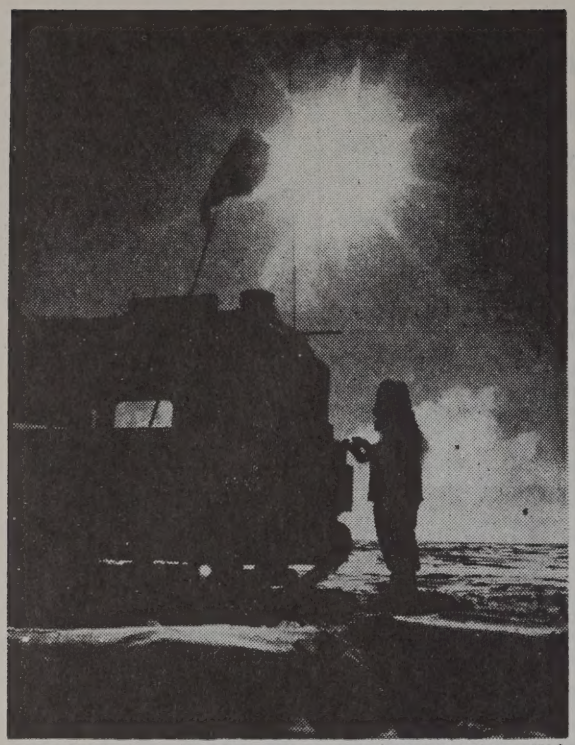
OSLO, Norway (AP)—The demise of the Norwegian whaling industry is predicted by Anders Jahre, president of the Whaling Association. He says "it's a fact we are not able to compete internationally any longer."

Whale Oil Output Declines

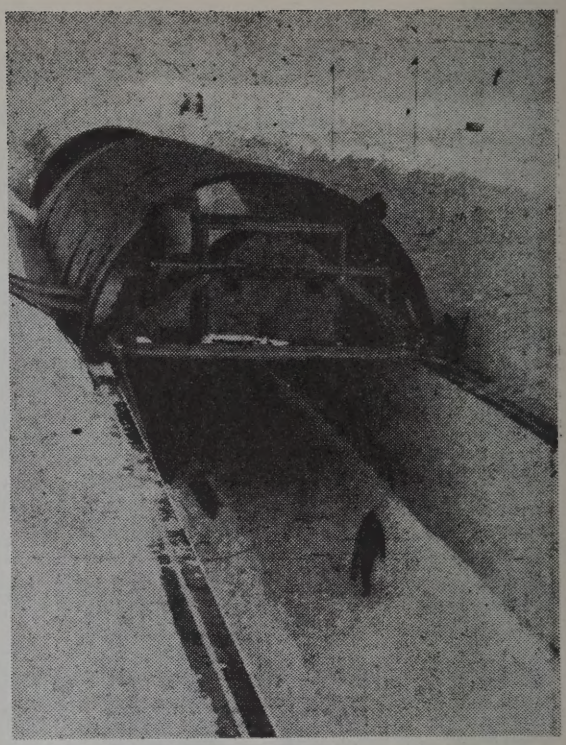
Norway's seven Antarctic whaling expeditions produced 140,980 barrels of whale oil as of Jan. 20, 1962, as against 274,000 barrels in 1961 when eight Norwegian expeditions participated.

Volcano Active in Antarctic

Most southerly known active volcano is Mount Erebus, reaching 13,202 feet on Ross Island in the Antarctic.



WARMING UP AT OPERATION DEEPFREEZE—This Antarctic scene is from the exhibit of official United States Navy pictures



GONE UNDER—New Byrd Station in the Antarctic is being built by installing steel arches over a 20-foot-deep cut into the snow. Eight such tunnels are interconnected.

Erecting a Position Marker on a Peak for Control Survey